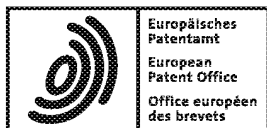


(19)



(11)

EP 1 770 171 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

04.04.2007 Bulletin 2007/14

(51) Int Cl.:

C12Q 1/68 (2006.01)

(21) Application number: **05109025.6**

(22) Date of filing: **29.09.2005**

(84) Designated Contracting States:

**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI
SK TR**

Designated Extension States:

AL BA HR MK YU

(71) Applicant: **UNIVERSITÄT ZU KÖLN**

D-50923 Köln (DE)

(72) Inventors:

- **Krut, Oleg**
50937 Köln (DE)

• **Palka-Santini, Marie**

50858 Köln (DE)

• **Cleven, Berit**

53919 Weilerswist (DE)

• **Krönke, Martin**

50968 Köln (DE)

(74) Representative: **Helbing, Jörg**

Postfach 10 22 41

50462 Köln (DE)

(54) **DNA microarray for rapid identification of Candida albicans in blood cultures.**

(57) The present invention provides a DNA microarray for identification and characterisation of microorganisms in a sample or clinical specimen. Furthermore, it provides for a method for rapid identification and strain

profiling of different microbial species in clinical specimens, especially in blood cultures, utilizing said DNA microarray.

EP 1 770 171 A1

Description

[0001] The present invention provides a DNA microarray for identification and characterisation of microorganisms in a sample or clinical specimen. Furthermore, it provides for a method for rapid identification and strain profiling of different microbial species in clinical specimens, especially in blood cultures, utilizing said DNA microarray.

Background

[0002] Isolation, identification and characterisation of bacteria from clinical specimens is a main task of microbiological routine diagnostics. In fact, microorganisms are ubiquitous in certain areas of the human body. For this reason isolation and identification of pathogenic bacteria from clinical material and discrimination of specific pathogens from contaminations with indigenous or environmentally encountered microorganisms is a requirement for the correct diagnosis of infectious diseases. Additionally, accurate identification of antibiotic resistance and particular virulence factors provide important information enabling the clinician to choose effective antimicrobial therapy.

[0003] In the course of infection, many specimen types can be used for direct identification of the pathogens. These include, but are not limited to, liquor in the course of bacterial meningitis, sputum from patients with bacterial pneumonia, urine in the course of upper and lower urinary tract infections, punctate from sites of deep purulent infections (such as abscess, phlegmone, lung emphysema and septic arthritis), stool from patients with gastrointestinal tract infections, pus or wound fluid from purulent infections of the skin and wounds. Sometimes, bacteria are represented in the specimen only in minor numbers, thus, indirect identification of pathogens after culture of specimens in liquid media is employed. Important examples are enrichment cultures of food samples during outbreaks of food borne infections and blood cultures for diagnosis of bloodstream infections.

[0004] The invasion of the bloodstream by microorganisms, especially bacteremia and fungemia, represents one of the most serious consequences of infections and is a high ranked cause of death (Mylotte, J.M. and Tayara, A., Eur. Clin. Microbiol. Infect. Dis. 19:157-163 (2000); Reimer, L.G. et al., Clin. Microbiol. Rev. 10:444-465 (1997)). Bacteremia is the means by which local infections spread hematogenously to distant organs. This hematogenous dissemination of bacteria is part of the pathophysiology of, e.g., meningitis and endocarditis, Pott's disease and many other forms of osteomyelitis. In the hospital, indwelling catheters are a frequent cause of bacteremia and subsequent nosocomial infections, since they provide a means by which bacteria normally found on the skin can enter the bloodstream. Other causes of bacteremia include dental procedures, urinary tract infections, intravenous drug use, and colorectal cancer.

[0005] Systemic fungal infection is becoming more and more common in modern hospitals. The most common fungal infections are candidiasis and aspergillosis, but other systemic fungal infections such as Histoplasmosis, Blastomycosis, Coccidioidomycosis and Cryptococcosis are also of increasing relevance. Systemic fungal infections in hospitals are commonly seen in immune compromised patients and - like bacteremia - in patients with indwelling catheters. Due to underlying serious illnesses and possible resistance of the pathogens to antifungal agents, patients with systemic fungal infections often have poor clinical outcomes. Infections due to *Candida* species are the fourth most important cause of nosocomial bloodstream infection.

[0006] Bacteremia is operationally defined as the presence of viable bacteria as evidenced by positive blood cultures. Fungemia is similarly defined as the presence of viable fungi as evidenced by positive blood cultures. When bacteremia or fungemia occurs in the presence of systemic symptoms (such as fever or chills) the condition is designated as sepsis; and in the setting of more severe disturbances of temperature, respiration, heart rate or white blood cell count, is characterised as systemic inflammatory response syndrome (SIRS).

[0007] Many septic episodes are nosocomial and often due to microorganisms with increased and multiple antimicrobial resistance. *Staphylococcus aureus*, *Escherichia coli*, Coagulase-negative staphylococci (CoNS), *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, *Enterococcus* spp., *Streptococcus* spp., *Candida albicans* and *Enterobacter cloacae* are the most frequent etiological agents of bacteremia and fungemia in Europe (Decousser, J. W. et al., J. Antimicrob. Chemother. 51:1214-22 (2003); Lyytikäinen, O. et al., Clin. Infect. Dis. 35:314-9 (2002); Reacher, M.H. et al., BMJ 320: 213-6 (2000); Rosenthal Kreuberger, E.J., Int. J. Antimicrob. Agents 24:196-8 (2004)) and the USA (Bourbeau, P.P. and Pohlman, J.K., J. Clin. Microbiol. 39:2079-82 (2001); Reimer, L.G. et al., Clin. Microbiol. Rev. 10:444-65 (1997); Reiser, L.G. et al., J. Clin. Microbiol. 37:2024-6 (1999); Wilson, M.L. et al., J. Clin. Microbiol. 37:1709-13 (1999)).

[0008] Nosocomial bacteremia and especially sepsis require an immediate antibiotic therapy, even when the causative bacteria are still unknown. Thus, said therapy has to be performed as empirical initial therapy (Rello, J. et al., Intensive Care Med. 20:94-98 (1994)), which covers the complete spectrum of relevant pathogens. However, the increase of bacterial resistance lowers the chance of success for such empirical antibiotic treatments considerably (Mylotte, J.M. and Tayara, A., Eur. Clin. Microbiol. Infect. Dis. 19:157-163 (2000); Weinstein, M.P. et al., Clin. Infect. Dis. 24:584-602 (1997)). This primary therapy can only be replaced by a specific treatment after a thorough microbial diagnosis which usually takes 76-120 h (Bourbeau, P.P. and Pohlman, J.K., J. Clin. Microbiol. 39:2079-2082 (2001)). A fast track diagnosis which shortens this lag time would increase the chance of therapy success.

[0009] Rapid and reliable detection of bloodstream infections, including characterisation of the pathogen to the species level and determination of its antibiotic susceptibility pattern, is crucial for several reasons: (i) Appropriate antimicrobial agents can be selected, and thus, unnecessary treatment with ineffective antibiotics can be avoided; (ii) the prognosis of the patients can be improved; (iii) the acquisition of resistances in pathogens may be decelerated and (iv) expenditures on antimicrobials and overall hospital costs can be reduced (Barenfanger, J. et al., J. Clin. Microbiol. 37:1415-8 (1999) ; Doern, G.V. et al., J. Clin. Microbiol. 32:1757-62 (1994); Trenholme, G.M. et al., J. Clin. Microbiol. 27:1342-5 (1989); Wheeler, A.P. and Bernard, G.R., N. Engl. J. Med. 340:207-14 (1999)). Therefore, there is a strong need for rapid tests for specific and sensitive identification of bacteria and pathogenic fungi directly from blood cultures.

[0010] The diagnosis of bacteremia commonly relies on blood cultures where the growth of microorganisms is continuously monitored by automated devices (James, P.A. and Al-Shafi, K.M., J. Clin. Pathol. 53:231-233 (2000); Reisner, B.S. and Woods, G.L., J. Clin. Microbiol. 37:2024-2026 (1999); Wilson, M.L. et al., J. Clin. Microbiol. 37:1709-1713 (1999)). Although such continuous-reading and computed systems decrease the time for detection of positive blood cultures, definitive pathogen identification from positive blood cultures still requires traditional Gram-staining, sub-culturing and susceptibility testing, delaying the identification of pathogens for one to three days (Levi, K and Townner, K.J., J. Clin. Microbiol. 41:3890-3892 (2003); Oliveira, K. et al., J. Clin. Microbiol. 41:889-891 (2003); Oliveira, K. et al., J. Clin. Microbiol. 40:247-251 (2002); Tan, T.Y. et al., J. Clin. Microbiol. 39:4529-4531 (2001)). The subculture procedure with subsequent species identification and determination of antibiotic resistance is time-consuming and elaborate. The biochemical and immunological assays like testing with coagulase, nuclease or latex agglutination are not always reliable. Antigenic and biochemical variations of bacteria grown in blood culture, inhibitory action of blood culture medium components as well as the presence of more than one microbial species may mislead data interpretation.

[0011] Staphylococci are the most important and frequent group of pathogens growing in blood culture, responsible for 30% to more than 50% of all bacteremia events (James, P.A. and Al-Shafi, K.M., J. Clin. Pathol. 53:231-233 (2000) ; Reisner, B.S. and Woods, G.L., J. Clin. Microbiol. 37:2024-2026 (1999); Velasco, E. et al., Sao Paulo Med. J. 118: 131-138 (2000)) with a mortality rate ranging from 13 to 50% (McClelland, R.S. et al., Arch. Intern. Med. 159:1244-1247 (1999); Rello, J. et al., Intensive Care Med. 20:94-98 (1994); Weinstein, M.P. et al., Clin. Infect. Dis. 24:584-602 (1997)). The emergence of *S. aureus* strains with multiple resistance to antibiotics makes empirical therapy prone to fail (Tan, T.Y. et al., J. Clin. Microbiol. 39:4529-4531 (2001)). *S. aureus* is generally regarded as a virulent pathogen, whereas CoNS are either considered as a cause of catheter-associated nosocomial bacteremia or, more frequently, as blood culture contamination. Thus, a subgenus identification of gram-positive cocci in clusters (CPCC) is of great clinical significance (Oliveira, K. et al., J. Clin. Microbiol. 41 :889-891 (2003)).

[0012] Methods used up to date for direct identification of *S. aureus* growing in blood culture bottles include biochemical tests, like detection of thermostable nuclease or tube coagulase test, or commercial antibody-based kits connected with the disadvantages listed above.

[0013] Besides *S. aureus* and coagulase-negative staphylococci, *E. coli*, *Klebsiella* spp., *Enterobacter* spp., *Proteus* spp. and *P. aeruginosa* belong to the most frequent reported pathogens causing bacteremia (Reimer, L.G. et al., Clin. Microbiol. Rev., 10:444-65 (1997); Reacher, M.H. et al., BMJ, 320:213-6 (2000); Lyytikäinen, O. et al., Clin. Infect. Dis., 35:e14-9 (2002)). In order to reduce the time needed for identification and susceptibility testing, the possibility of combining an automated blood culture system with an automated identification and susceptibility testing system by direct inoculation from positive blood cultures has been studied for gram-positive cocci as well as for gram-negative rods by several groups of investigators, but with varying success (Reimer, L.G. et al., Clin. Microbiol. Rev., 10:444-65 (1997); Hansen, D.S. et al., Clin. Microbiol. Infect., 8:38-44 (2002); Ling, T.K. et al., J. Clin. Microbiol., 41:4705-7 (2003); Funke, G. and Funke-Kissling, P., J. Clin. Microbiol., 42:1466-70 (2004)). Although the authors saw some potential of the combined system to allow the agar isolation step to be skipped, the system is hampered by the fact that (i) the blood culture sample has to undergo a time-consuming separation procedure for the enrichment of bacterial cells, (ii) the identification rate varies depending on the employed identification system and (iii) the performance is not equally good for gram-negative and gram-positive pathogens (Reimer, L.G. et al., Clin. Microbiol. Rev., 10:444-65 (1997); Ling, T.K. et al., J. Clin. Microbiol., 41:4705-7 (2003); Funke, G. and Funke-Kissling, P., J. Clin. Microbiol., 42:1466-70 (2004)).

[0014] Considerable progress was made using nucleic acid-based methods for the identification and genotyping of bacteria or fungi in blood specimens. Assays employing ribosomal RNA-based oligonucleotide probes like fluorescence *in situ* hybridisation (FISH) (Chapin, K. and Musgnug, M., J. Clin. Microbiol. 41:4324-7 (2003); Jansen, G.J. et al., J. Clin. Microbiol. 38:814-7 (2000); Kempf, V.A. et al., J. Clin. Microbiol. 38:830-8 (2000); Oliveira, K. et al., J. Clin. Microbiol. 41:889-91 (2003)) or microarrays (Anthony, R.M. et al., J. Clin. Microbiol. 38:781-8 (2000); Marlowe, E.M. et al., J. Clin. Microbiol. 41 :5127-33 (2003); Sogaard, M. et al., J. Clin. Microbiol., 43:1947-9 (2005)) provide for rapid species identification in blood cultures. However, methods solely based on ribosomal RNA probes allow species identification only, and do not provide information on antibiotic susceptibility and other strain specific characteristics (e.g. virulence genes). For the molecular detection of antibiotic resistances in staphylococci, several multiplex PCR-based assays were described (Martineau, F. et al., Antimicrob. Agents Chemother. 44:231-8 (2000); Shrestha, N.K. et al., Approved standard M2-4A, Villanova, PA (1990); Strommenger, B.C. et al. J. Clin. Microbiol. 41:4089-94; Tan, T.Y. et al., J. Clin. Microbiol.

39:4529-31 (2001)). Several groups have successfully identified *S. aureus* and more specifically methicillin-resistant *S. aureus* strains (MRSA) from blood cultures by using DNA probes (Levi, K. and Towner, K.J., J. Clin. Microbiol. 41: 3890-3892 (2003); Poulsen, A.B. et al., J. Antimicrob. Chemother. 51 :419-421 (2003)), peptide nucleic acid probes (Oliveira, K. et al., J. Clin. Microbiol. 41 :889-891 (2003)), multiplex PCR (Mason, W. J. et al., J. Clin. Microbiol. 39: 3332-3338 (2001)), gel-based PCR (Krishnan, P.U. et al., J. Clin Pathol. 55:745-748 (2002)), and real-time PCR (Shrestha N.K. et al., J. Clin. Microbiol. 40:2659-2661 (2002); Tan, T.Y. et al., J. Clin. Microbiol. 39:4529-4531 (2001)).

[0015] However, the use of such molecular assays suffers from two main restrictions: First, they rely on a pre-identification of the pathogen since their discriminatory capacity is technically limited, for instance by the number of fluorochromes available for labelling the probes or, in the case of multiplex PCR, by the capacity of resolution in gel electrophoresis. These molecular assays are thus usually not scalable and unfit for high throughput analysis.

[0016] The last years have witnessed the emergence of many DNA microchip projects arraying genes of microorganisms (Ye, R.W. et al., J. Microbiol. Methods 47:257-272 (2001)). They can detect tens of thousands of DNA sequences in a single hybridisation step (DeRisi, J.L. et al., Science 278:680-686 (1997); Duggan, D.J. et al., Nat. Genet. 21:10-14 (1999); Lashkari, D.A. et al., Proc. Natl. Acad. Sci. USA 94:13057-13062 (1997)). Originally developed for gene expression profiling, DNA sequence analysis and genotyping, microarrays were recently also used to identify viral (Wang, R.F. et al., FEMS Microbiol. Lett. 213:175-182 (2002)) and bacterial (Bekal, S. et al., J. Clin. Microbiol. 41 :2113-2125 (2003)) pathogens in environmental and clinical samples.

[0017] Most of the published reports employed oligonucleotide microarrays containing a reduced number of spotted probes and representing a single bacterial species only (Volokhov, D. et al., J. Appl. Microbiol. 95:787-798 (2003); Volokhov, D. et al., J. Clin. Microbiol. 41:4071-4080 (2003); Volokhov, D. et al., J. Clin. Microbiol. 40:4720-4728 (2002)). Such arrays were used to identify pathogenic strains belonging to a pre-identified species (Chizhikov, V. et al., Appl. Environ. Microbiol. 67:3258-3263 (2001)), to distinguish between species of the same genus (Volokhov, D. et al., J. Clin. Microbiol. 41:4071-4080 (2003); Volokhov, D. et al., J. Clin. Microbiol. 40:4720-4728 (2002)) or to detect genes encoding resistance to a certain antibiotic (Volokhov, D. et al., J. Appl. Microbiol. 95:787-798 (2003)).

[0018] Although such specific short-oligonucleotide microarrays could be rapidly designed and built up they carry some intrinsic disadvantages: like all methods based on single and often short DNA sequences they show reduced reliability and sensitivity (Stears, R.L. et al., Nat. Med. 9:140-145 (2003)). To palliate the high probability of non-specific hybridisation due to their short size (20-40bp) it is necessary to design many partially overlapping oligonucleotides in order to confirm the presence of a gene. This consequent increase in complexity makes it extremely difficult to set up the optimal hybridisation conditions necessary for producing trustful results. Moreover, surface-bound short oligonucleotides have poor hybridisation properties and are highly sensitive to single nucleotide polymorphisms (Hughes, T.R. et al., Nat. Biotechnol. 19:342-347 (2001)). For these reasons, oligonucleotide micro-arrays are unsuitable for routine diagnostics.

[0019] Up to now, diagnosis of bacteremia by microarrays is limited to species identification by oligonucleotides for 23S RNA sequences, which is still strictly experimental (Anthony, R.M. et al., J. Clin. Microbiol. 38:781-788 (2000)) and carries along the methodological weakness associated to the use of oligonucleotides as hybridisation probes.

[0020] A DNA microarray employing capture probes of more than 40 nt length amplified by PCR was described by Fitzgerald et al. (Fitzgerald, J.R. et al., Proc. Natl. Acad. Sci. USA 98(15):8821-8826 (2001)). To investigate molecular population genetics of *Staphylococcus aureus* on a genome scale, a microarray comprising 2817 complete ORFs of *S. aureus* strain COL was constructed, representing >90% of the *S. aureus* genome. The microarray was able to discriminate 36 *S. aureus* strains. However, since it was not designed for the identification of different bacterial species, it was not tested for possible cross reactions with other bacteria besides *S. aureus*. Due to the conservative nature of many house-keeping proteins and genes, respectively, cross reactions of the microarray with CoNS strains and other bacterial species will occur. Unspecific cross reactions combined with the high number of probes (2817) result in a high complexity of the microarray data, not applicable to routine diagnostics. Furthermore, PCR amplification of long ORFs is a difficult procedure, in particular for bacteria with DNA of high GC-content.

[0021] The aim of present invention is to provide a gene-segment based microarray for identification and characterisation of different microorganisms, especially different bacteria and pathogenic fungi, present in a sample or clinical specimen.

Summary of the Invention

[0022] The present invention provides a DNA microarray for the identification and characterisation of microorganisms in biological samples, especially of microorganisms connected with bacteremia, fungemia and sepsis. Species specific gene probes in this microarray allow the identification of different microbial species, whilst antibiotic resistance and virulence gene probes allow for the genotypic discrimination within a species. The microarray can be designed to allow species identification, virulence determination and resistance determination independently from each other or simultaneously, and furthermore said determinations can be performed for one or more different microbial species and strains

with one microarray. Furthermore, different microbial species and strains are discriminated, even in a polymicrobial sample (specimen with more than one pathogen).

[0023] The DNA microarray according to present invention thus demonstrates the feasibility of simultaneously identifying and characterising different microbial species in a sample or clinical specimen, especially in blood samples, without prior PCR amplification of target DNA or pre-identification of the pathogen. This can reduce sample processing time to a single day and less.

[0024] The invention furthermore provides a method for rapid identification and characterisation of microorganisms, especially of bacteria, yeasts and filamentous fungi, using the microarray of the invention. The method is quick, can be automated, leads to reproducible results and allows an early choice of specific antibiotics for treatment of bacteremia, fungemia or sepsis.

[0025] In particular, the present invention provides

(1) a DNA microarray for direct identification and characterisation of microorganisms in a sample or clinical specimen, wherein the microarray comprises gene probes being derived from DNA sequences or partial DNA sequences of the microorganisms to be identified or DNA sequences complementary or homologous thereto and having a length of at least 100 nucleotides (nt);

(2) the use of the DNA microarray as defined in (1) above for *in vitro* identification and characterisation of microorganisms in a sample or in a clinical specimen, preferably for the diagnosis of bacteremia, fungemia or sepsis;

(3) an *in vitro* method for identification and characterisation of microorganisms in a sample or in a clinical specimen comprising

(a) isolating the total DNA from the sample or clinical specimen and labelling the DNA with a reporter molecule, preferably a fluorochrome;

(b) applying the DNA thus obtained to the DNA microarray as defined in (1) above and hybridising the DNA with the gene probes of the DNA microarray; and

(c) detecting DNA bound to the DNA microarray by determination of the amount of the reporter molecules bound to the array; and

(4) a kit for detection of microorganisms in a sample or clinical specimen comprising the microarray of embodiment (1).

Brief description of the Figures

[0026]

Fig. 1: DNA microarray analyses of 58 clinical isolates, reference strains and blood cultures.

Each column shows the results of an individual hybridisation with target DNA prepared from: *S. aureus* ATCC 29213 (1), MW2 (2), clinical isolates (3-7), positive blood cultures (8-11); *P. aeruginosa* ATCC 27853 (12), clinical isolates (13-17), positive blood culture (18); *E. coli* ATCC 25922 (19), clinical isolates (20-25), positive blood cultures (26-27); *S. epidermidis* clinical isolates (28-32), positive blood cultures (33-35); clinical isolates of *S. auricularis* (36), *S. capitis* (37), *S. haemolyticus* (38), *S. hominis* (39), and *S. warneri* (40). Other Gram-negative species included a *Proteus mirabilis* positive blood culture (41), clinical isolates of *Proteus mirabilis* (42-43), *Serratia marcescens* (44-45), *Klebsiella pneumoniae* (46-48), *Stenotrophomonas maltophilia* (49), *Acinetobacter baumannii* (50), *Enterobacter cloacae* (51) and *Enterobacter aerogenes* (52); other Gram-positive species included clinical isolates of *Micrococcus* spp. (53), *Enterococcus* spp. (54), *Enterococcus faecalis* (55) and *Streptococcus pneumoniae* (56) and two positive blood cultures of *S. pneumoniae* (57-58).

(A) Hybridisation of DNA prepared from bacterial isolates, reference strains and blood cultures with *E. coli* gene probes;

(B) hybridisation with *P. aeruginosa* gene probes;

(C) hybridisation with *S. aureus* gene probes.

Grey boxes represent gene probes which hybridised with the respective target DNA, white boxes represent gene probes which showed no hybridisation with the respective target DNA.

Fig. 2: Validation of the *S. aureus* microarray of example 11. 2 µg genomic DNA from *S. aureus* strain T94 were labelled either with Cy3 or Cy5, combined and hybridised as described in Example 11. Cy3: green signal; Cy5: red signal; double-hybridisation: yellow signal.

- A) Overlay of microarray scanned using Cy3 and Cy5 filter sets;
 B) Scatterplot of normalized fluorescence intensities of individual gene probes after microarray hybridisation.
 The signal intensities from both channels correlate highly with each other ($r^2 = 0.97$).

Fig. 3: Specific identification of *S. aureus* from distantly related bacteria using the microarray of example 11. 2 µg of *S. aureus* DNA were co-hybridised with 2 µg of pure *E. coli* (A) or *P. aeruginosa* (B) genomic DNA. Obtained hybridisation patterns are represented as bar codes, where the 140 spotted gene segments appear subsequently and are clustered in categories (NC: negative control; PC: positive control; Antibiotic Resistance Determinants; Virulence Factors and Metabolic Functions (see Tab. 6)). Positive hybridisation is indicated by a bar while negative spots are represented by an empty area. Both assays show clear *S. aureus* discrimination with practically no cross hybridisation between DNA from said gram negative bacteria and *S. aureus* selected genes, while the positive control (16S RNA sequence) reveals the good quality of hybridisation.

Fig. 4: Specific identification of *S. aureus* from coagulase negative staphylococci using the microarray of example 11. 2 µg of *S. aureus* DNA were co-hybridised with 2 µg of *S. epidermidis* (A) or *S. saprophyticus* (B) genomic DNA. Obtained hybridisation patterns are illustrated by scanned fluorescent picture data (A: *S. aureus*: green signal; *S. epidermidis*: red signal; B: *S. aureus*: red signal; *S. saprophyticus*: green signal) and transformed in bar codes (see legend of Fig. 3). All specific *S. aureus* virulence factor genes hybridised exclusively with *S. aureus* DNA. Yellow spots showing cross-hybridisation correspond to some shared antibiotic resistance determinants and genes associated to metabolic functions.

Fig. 5: Specificity of the *S. aureus* microarray of example 11.

- A) Scan of microarray hybridised with 2 µg each of genomic DNA from *S. aureus* strain T103 (Cy3, represented in green) or T100 (Cy5, represented in red), showing remarkable genotypic differences between strains.
 B) PCR amplification of the genes from genomic DNA of *S. aureus* (strains T100 and T103) validating results of the microarray hybridisation shown in (A).

Fig. 6: Identification and characterisation of *S. aureus* from positive blood culture using the microarray of example 11. 2 µg of DNA prepared from blood culture positive for *S. aureus* (strain T95) was co-hybridised with 2 µg of DNA prepared from sterile blood culture or with 2 µg of pure *S. aureus* genomic DNA for 4 hours. Positive and negative spots are transformed in a bar code scheme (see legend of Fig. 3). Sterile blood culture DNA did not cross-hybridise with spotted *S. aureus* genes (A). Blood culture positive for *S. aureus* produced a fluorescent hybridisation pattern almost identical to the pattern obtained with pure *S. aureus* genomic DNA (B).

Definitions

[0027] In the framework of the present invention the following terms and definitions are used.

[0028] A "DNA microarray" consists of a collection of nucleic acid sequences, preferably DNA sequences, immobilized onto a solid support, such as glass, plastic or silicon chips, in a latticed pattern (forming an "array"). Each unique sequence of said sequences forms a tiny feature on the microarray called a "spot" or "capture probe". The size of these spots varies from one system to another, but is usually less than two hundred micrometers in diameter, thus up to tens of thousands of spots can be arrayed in a total area of a few square centimeters. DNA microarrays provide a means to detect and quantify large numbers of discrete nucleic sequences in parallel. In a microarray hybridisation the nucleic acids in the sample that is being analysed (called "target") are expected to form duplexes specifically with the corresponding capture probes. Occurrence or absence of duplex formation indicate the presence or absence of said target. For routine microarray analysis, said target is commonly converted to a labelled population of nucleic acids, using reporter molecules. Hybridisation of said labelled target DNA molecules from the tested samples with complementary DNA sequences affixed in specific spots on the array can thus be detected by examination for the presence of said label on the array using a microarray scanner (Müller, H.-J., Röder, T., "Der Experimentator: Microarrays, Spektrum Akademischer Verlag, Heidelberg (2004)).

[0029] "Gene probe" or "gene probe derived from..." refers to a DNA sequence present on the microarray of present invention and used as a capture probe. It is complementary to a target DNA sequence, preferably to a microbial, more preferably to a bacterial or fungal gene or gene segment. Said gene probe is prepared by any known method of DNA synthesis, and preferably prepared by cloning the respective PCR-amplified gene or gene segment into a plasmid/vector. The recombinant gene or gene segment is then amplified by PCR, isolated from the amplification mix, purified (preferably by ethanol-purification) and finally spotted onto the array.

[0030] A "clinical isolate" is a microbial, especially a fungal or bacterial strain isolated from a clinical specimen, wherein the isolation includes at least one *in vitro* propagation.

[0031] An "isolated DNA" is a DNA separated or purified from the organism it is naturally associated with or from the clinical specimen in which it occurs. This comprises biochemically or biophysically purified native DNA, recombinant DNA, chemically synthesized DNA and DNA analogues (e.g. peptide nucleic acids).

[0032] "Native" is synonymous to "naturally (occurring)".

[0033] A "DNA segment" or "gene segment" is an isolated DNA which contains or consists of a part of the native full-length sequence of a gene which is still able to hybridize to the native sequence under stringent hybridisation conditions. Although the present invention is in the following exclusively described as relating to "DNA" sequences, it is not to be construed as being limited thereto. Rather, if the term "DNA" is used in connection with the gene probes or target sequences of present invention, it includes other polynucleotides (like RNA or RNA/DNA hybrids), and DNA analogues such as PNA, phosphonate backbone DNA, artificial pentose or hexose backbone DNA which is able to hybridize with native DNA etc.. Furthermore, modified bases like deoxy bases, inosine or aminoallylcytosine may be used on all DNA, RNA and PNA backbones. However, DNA itself is the preferred polynucleotide for performance of the invention.

[0034] The DNA sequences used as gene probes in present invention are either identical, substantially identical or homologous to the complementary native target sequences. In the context of present invention, when a specific DNA sequence is denominated, this encompasses not only said specific sequence, but also the sequences substantially identical or homologous thereto, i.e. its substitution mutants. "Substantially identical" means that the DNA contains mutations of up to 10% of the total number of nt in comparison with the native DNA sequence and/or has a nucleotide identity of > 90% to the corresponding native DNA segment. Said mutations are preferably single nucleotide polymorphisms or point mutations and include the mutation of not only a single but also a few (up to 10 nt, preferably up to 5 nt) consecutive nt. "Homologous" or "homologue" refers to a DNA sequence which has a sequence identity of more than 70% of the corresponding native DNA sequence and encompasses the substantially identical DNA sequences. Preferably, the sequences used as gene probes are at least substantially identical to the corresponding native DNA sequence.

[0035] Preferred gene probes of the present invention are the DNA sequences listed in the sequence protocol, their complementary sequences or their corresponding native DNA segment.

[0036] The DNA sequences used as gene probes in present invention may also be deletion or addition mutants of the corresponding native DNA segments. In case of deletion mutants, the minimum length of the DNA sequences suitable as probes in present invention is 100 nt. Preferably, the deletions take place at the 5' - and/or 3' -terminus of the native DNA segment. In case of addition mutants, the added nucleotides may sum up to a total of 90% of the nucleotide number of the native DNA segment, if added at the 5' - or 3' - terminus of the DNA sequence. Alternatively, the additions and deletions may be of one isolated nucleotide or of 2 or more consecutive nucleotides at one or more internal site(s) of the native DNA segment. Preferably, 0-30% nucleotides of the corresponding native DNA segment are added or deleted. It is most preferred that the addition or deletion mutants used as gene probes in present invention comprise one or more segment(s) of at least 100 consecutive nt each, which are derived from one gene, and/or sequences homologous (70% homology) or complementary thereto. These segments may be embedded in or fused to other DNA sequences, which will not hybridize under stringent conditions with either human or bacterial DNA or the DNA of the target microorganism. Said other DNA sequences preferably have a maximum length which adds up with the length of the enclosed segment (s) to not more than the upper limit for the length of gene probes suitable for present invention.

[0037] A "positive blood culture" is an *in vitro* culture started from whole blood or blood components wherein the growth of microorganisms has been detected. Said growth is indicated by a positive growth index. The detection is preferably done by monitoring CO₂ production in the blood culture.

[0038] "Direct identification" of microorganisms refers to an identification method which comprises isolation of DNA from a sample or clinical specimen, but does not require an amplification of the genetic material of the microorganisms after said isolation in order to identify the microorganisms using the method of present invention. The isolated genetic material is labelled and applied to the DNA microarray of present invention without prior amplification, i.e. directly after isolation or after a short workup step.

[0039] A "detection method" in the context of the present invention is a method for determination of hybridisation of DNA molecules contained in a sample to the probes on the solid support of the microarray of present invention. This method may be any textbook method for detection of DNA hybridisation on microarrays, e.g. direct detection or labelling of target DNA with a reporter molecule and consecutive visualisation of the reporter molecule. Preferred detection methods are said labelling method and the direct detection by electrical biosensors or mass spectrometry (Liu, R. H. et al., Anal. Chem. 76(7):1824-31 (2004); Stomakhin, A. A. et al., Nucleic Acids Res. 28(5):1193-8 (2000)).

[0040] A "reporter molecule" in the context of the method of the present invention is a chemical or physical marker which allows differentiation of labelled from unlabelled DNA by physical, chemical or immunological methods. The labelling method includes, but is not limited to radioactive labelling (e.g. with ³³P, ³²P), fluorescent/luminescent/chromophor labelling and hapten labelling (i.e. psoralen or DIG). It is followed by an appropriate detection step necessary to

determine the presence and/or quantity of the reporter molecule, namely scintillation counting (e.g. phosphoimaging); photoptic measurement (e.g. fluorescence measurement, luminescence measurement) and antibody-based detection (including colorimetric, luminescence or fluorescence detection), respectively. Preferably, the reporter molecule is a fluorochrome/fluorophor (both terms are used as synonyms in the context of present invention) which includes but is not limited to cyanines, fluoresceins and rhodamines. More preferably, it is of the cyanine group of fluorophores. Most preferably, it is selected from the group consisting of the fluorophores Cy3, Cy5 or Alexa Fluor 647 and Alexa Fluor 546. The ratio of base to dye molecules (BDR) in DNA labelled with such reporter molecules is preferably less or equal to 60.

Detailed description of the invention

[0041] The present invention provides a DNA microarray and its use for rapid identification and characterisation of microorganisms in a sample or clinical specimen (embodiments (1) to (3)).

[0042] The DNA microarray of embodiment (1) of the invention comprises gene specific DNA sequences as capture probes, which allow the identification of microbial species ("target species"), especially of bacterial and fungal species, and/or their further characterisation with regard to antibiotic resistance and virulence. Preferably, it allows the identification and characterisation of the target species. It is specific, applicable to the analysis of DNA isolated from blood cultures and suitable to detect resistance genes.

[0043] One important feature of the microarray of the present invention is that the panel of probes can be continually extended to include sequences for additional species, variant isolates or antibiotic resistance determinants as they are characterised and available. The accuracy, range and discriminatory power of the gene-segment based microarray can be refined by adding or removing gene probes to the panel without significantly increasing complexity or costs. In a pilot study, three important species causing bacteremia were selected to provide a proof of principle (examples 1-10). The range of organisms that can be identified can be easily expanded by increasing the number of gene probes on the array. For example, addition of a few probes specific for *S. epidermidis* and other CoNS will allow for the species identification of coagulase-negative staphylococci. Furthermore, due to a specific hybridisation pattern for each species it will also allow the identification of mixed blood cultures with more than one pathogen.

[0044] A second important feature of this microarray format is the length of the DNA sequences used as gene probes. They are at least 100 nt, preferably 100-3000 nt long. In an especially preferred aspect of embodiment (1) the length of the gene probes is from 100 to 1000 nt, most preferably from 200 to 800 nt. Thus, one probe per gene is usually sufficient to produce strong signals and high specificity (Stears, R.L. et al., Nat. Med., 9:140-5 (2003)). For long probes like these, minor point mutations are likely to only slightly reduce duplex formation, which does not lead to the loss of hybridisation signals. In contrast, short oligonucleotide microarrays sometimes lack specificity and require multiple short oligonucleotides per one gene.

[0045] The microorganisms or microbial DNA to be detected using the microarray of present invention are preferably bacteria (such as *Staphylococci*, *Enterococci*, *Streptococci*, *E. coli*, *P. aeruginosa*) or fungi (such as yeasts and filamentous fungi, in particular *Candida* spp., *Aspergillus* spp., *Cryptococcus* spp., *Malassezia* spp., *Trichosporin* spp.), respectively bacterial or fungal DNA. The microarray is especially suitable for direct identification and characterisation of bacteria and *C. albicans*.

[0046] In one preferred aspect of embodiments (1), (2) and (3), the DNA microarray is feasible to identify and characterize any of the microorganisms, including the fungi and bacteria as defined above, known as etiological agents of fungemia, bacteremia or sepsis. In another preferred aspect of (1), it is feasible to characterize the bacteria known as etiological agents of bacteremia or sepsis. More preferably, it is feasible to identify and characterize at least 90 % of said microorganisms or bacteria. Equally more preferably it is feasible to identify and characterize microorganisms selected from the group consisting of *S. aureus*, *Coagulase-negative staphylococci*, *Enterococci*, *Streptococci*, *E. coli*, *Klebsiella* spp., *Proteus* spp., *Enterobacter* spp., *P. aeruginosa*, *Stenotrophomonas* spp., *Acinetobacter* spp. and *Candida albicans*, most preferably microorganisms selected from the group consisting of *C. albicans*, *Enterococcus faecalis*, *Enterococcus faecium*, *E. coli*, *Klebsiella oxytoca*, *Klebsiella pneumoniae*, *Proteus mirabilis*, *Proteus vulgaris*, *Enterobacter cloacae*, *P. aeruginosa*, *Stenotrophomonas maltophilia*, *Acinetobacter baumannii*, *S. aureus*, *Staphylococcus epidermidis*, *Staphylococcus haemolyticus*, *Staphylococcus lugdunensis*, *Staphylococcus warneri*, *Streptococcus agalactiae*, *Streptococcus bovis*, *Streptococcus dysgalactiae*, *Streptococcus mitis*, *Streptococcus mutans*, *Streptococcus pneumoniae*, *Streptococcus pyogenes*. Most preferably, it is feasible to identify and characterize at least *S. aureus*, *E. coli* and *P. aeruginosa*.

[0047] The practicability and specificity of the DNA microarray for the identification and characterisation of *Staphylococcus aureus*, *Escherichia coli* and *Pseudomonas aeruginosa* grown in blood culture specimens was evaluated with clinical isolates and positive blood cultures (Examples 1-10). Especially preferred is a microarray which allows identification and characterisation of *S. aureus*. The latter microarray allows the detection of every *S. aureus* isolate, unambiguously identifies most of important virulence genes such as *tsst-1*, *sea*, *seb*, *eta* and antibiotic resistance genes such as *mecA*, *aacA-aphD*, *blaZ*, *ermA* and specifically distinguishes *S. aureus* from unrelated gram negative bacteria, e.g.

Escherichia coli or *Pseudomonas aeruginosa*, as well as from closely related CoNS (Example 11, Fig. 2-6).

[0048] In another preferred aspect of the invention, the microarray of (1) is suitable for diagnosis of fungemia, bacteremia or sepsis; especially for diagnosis of bacteremia, candidemia, and bacterial or *Candida* sepsis.

[0049] The present invention provides a novel approach for detection of microorganisms, especially of bacteria and fungi, by microarrays: using gene-segments it allows species identification by probing a large and diverse set of species-specific genes. Such an approach is reliable since it makes possible to identify a pathogen even when some genes have been deleted from its genome. Furthermore, the selected DNA probes are at least 100 nt, preferably 200 to 800 nt long and are therefore not sensitive to single nucleotide polymorphisms or CG-content variations in the targets. Therefore, a gene segment array according to present invention is useful for indicating the presence of a gene even though the sequence may be slightly altered e.g. by point mutations (Southern, E. et al., Nat. Genet. 21 :5-9 (1999)). Additionally, it permits species virulence and antibiotics resistance profiling all together in a single-step test. Thus, present invention provides for a significant improvement compared to the classical approach focused on the detection of a short evolutionary conserved sequence like 16S RNA.

[0050] The number and perfect composition of gene-segments necessary for a correct species identification, virulence determination and resistance profiling must be determined by empiric specificity tests. Thus, in a preferred aspect of the invention, the DNA microarray of embodiment (1) comprises the minimal number of species specific gene probes which is sufficient for species identification, the minimal number of virulence gene probes which is sufficient for virulence determination, and/or the minimal number of resistance gene probes which is sufficient for determination of resistance of a specific microorganism. Preferably, the minimal number of gene probes in this aspect of the invention is: for correct species identification at least 2 different species specific gene probes per target species, more preferably at least 10, most preferably at least 20; for virulence determination at least 1 gene probe per target species, more preferably at least 5 different gene probes, even more preferably at least 20 different gene probes, most preferably gene probes for all known virulence factors of each target species; for determination of resistance at least 1 gene probe per antibiotic class or resistance factor, more preferably at least 5 different gene probes, most preferably all known gene-coded resistance determinants in the target species.

[0051] Generally, the DNA microarray of embodiment (1) comprises gene probes which are specific for a microbial species, bacterial/fungal species or a group of microorganisms to be identified. Said gene probes are preferably DNA sequences selected from three different groups, namely (a) species specific gene probes; (b) virulence gene probes; and/or (c) resistance gene probes. Preferably, the species specific set of gene probes for each species to be identified and characterised is selected from species specific gene probes (a) for

(i) *Staphylococcus aureus* including gene probes derived from *cataSaur*, *clfA*, *clfB*, *coa*, *l-clpC*, *l-clpP*, *l-ctaA*, *l-ctsR*, *l-dltA*, *l-dltB*, *l-dltC*, *l-dnaK*, *l-elkT*, *l-femD*, *l-glnA*, *l-glnR*, *l-grlA*, *l-grlB*, *l-groEL*, *l-groES*, *l-hemA*, *l-hemE*, *l-hemH*, *l-hemL*, *l-hemY*, *l-lepA*, *l-lrgA*, *l-lrgB*, *l-lytM*, *l-menB*, *l-menD*, *l-menE*, *l-menF*, *l-mreB*, *l-mreR*, *l-mutL*, *l-mutS*, *l-NAG*, *l-pbg*, *l-pbpF*, *l-pdhB*, *l-pdhC*, *l-rsbU*, *l-rsbV*, *l-rsbW*, *l-sgp*, *l-sirR*, *l-sodA*, *l-sodB*, *l-sstA*, *l-sstB*, *l-sstC*, *l-sstD*, *l-trx*, *l-yhiN*, *epiP-bsaP*, *geh*, *gyrA*, *gyrB*, *hemB*, *hemC*, *hemD*, *hemN*, *hsdS*, *lip*, *menC*, *nuc*, *pdhD*, *rpoB*, *SAV0431*, *SAV0439*, *SAV0440*, *SAV0441*, *sigB*, *spa*, *sstC*, *tag*, *tyrA*, *l-aroC*, *l-aroA*, *l-cna*, *l-ebpS*, *l-eno*, *l-fbpA*, *l-fib*, *l-fnbB*, *l-srtA*, *l-stpC*, *l-fnbA*, *l-spa*, *l-aroE*, *l-aroF*, *l-aroG*, *l-asp23*, *l-atl*;

(ii) *Escherichia coli* including gene probes derived from *b1169*, *envZ*, *fliCb*, *nfrB*, *nlpA*, *pilAe*, *yacH*, *yagX*, *ycdS*, *yciQ*, *ymcA*;

(iii) *Staphylococcus epidermidis* including gene probes derived from *ardeSE0106*, *ardeSE0107*, *aroSE0105*, *atlE*, *agrB*, *agrC*, *alphSE1368*, *gad*, *glucSE1191*, *hsp10*, *icaA*, *icaB*, *m vaSSepid*, *nitreSE1972*, *nitreSE1974*, *nitreSE1975*, *oiamtSE1209*, *ORF1Sepid*, *ORF3bSepid*, *qacR*, *sin*, *ureSE1861*, *ureSE1863*, *ureSE1864*, *ureSE1865*, *ureSE1867*;

(iv) *Staphylococcus haemolyticus* including gene probes derived from *folQShaemolyt*, *mvaCShaemolyticus*, *mvaD-Shaemolyt*, *mvaK1Shaemolyticus*, *mvaSShaemolyticus*, *RNApolsigm*;

(v) *Staphylococcus lugdunensis* including gene probes derived from *agrB2Stalugd*, *agrC2Stalugd*, *agrCStalugd*, *slamStalugd*;

(vi) *Staphylococcus warneri* including gene probes derived from *msrw1Stwar*, *nukMStwar*, *proDStwar*, *proMStwar*, *sigrpoStwar*, *tnpStwar*;

(vii) *Candida albicans* including gene probes derived from *ARG56*, *ASL43f*, *BGL2*, *CACHS3*, *CCT8*, *CDC37*, *CEF3*, *CHS1*, *CHS2*, *CHS4*, *CHS5*, *CHT1*, *CHT2*, *CHT4*, *CSA1*, *5triphosphatase*, *AAF1*, *ADH1*, *ALS1*, *ALS7*, *EDT1*, *ELF*, *ESS1*, *FAL1*, *GAP1*, *GNA1*, *GSC1*, *GSL1*, *HIS1*, *HTS1*, *HWP1*, *HYR1*, *INT1a*, *KRE15f*, *KRE6*, *KRE9*, *MIG1*, *MLS1*, *MP65*, *NDE1*, *PFK2*, *PHR1*, *PHR2*, *PHR3*, *PRA1*, *PRS1*, *RBT1*, *RBT4*, *RHO1*, *RNR1*, *RPB7*, *RPL13*, *RVS167*, *SHA3*, *SKN1*, *SRB1*, *TCA1*, *TRP1*, *YAE1*, *YRB1*, *YST1exon2*;

(viii) *Enterococcus faecalis* including gene probes derived from *arcA*, *arcC*, *bkdA*, *cad*, *camE1*, *csrA*, *dacA*, *dfr*, *dhoD1a*, *ABC-eltA*, *agrBfs*, *agrCfs*, *dnaE*, *ebsA*, *ebsB*, *eep*, *efaR*, *gls24_glsB*, *gph*, *gyrAEf*, *metEf*, *mntHCb2*, *mob2*, *mvaD*, *mvaE*, *parC*, *pcfG*, *phoZ*, *polC*, *ptb*, *recS1*, *rpoN*, *tms*, *tyrDC*, *tyrs*;

(ix) *Enterococcus faecium* including gene probes derived from *bglB*, *bglR*, *bglS*, *efmA*, *efmB*, *efmC*, *mreC*, *mreD*, *mvaDEfaecium*, *mvaEEfaecium*, *mvaK1Efaecium*, *mvaK2Efaecium*, *mvaSEfaecium*, *orf3_4Efaecium*, *orf6_7Efaecium*, *orf7_8Efaecium*, *orf9_10Efaecium*;

(x) *Klebsiella pneumonia* including gene probes derived from *atsA*, *atsB*, *budC*, *citA*, *citW*, *citX*, *dalD*, *dalK*, *dalT*, *acoA*, *acoB*, *acoC*, *ahfK*, *fimK*, *glfKPN2*, *ltrA*, *mdcC*, *mdcF*, *mdcH*, *mrkA*, *mtrK*, *nifF*, *nifK*, *nifN*, *tyrP*, *ureA*, *wbbO*, *wza*, *wzb*, *wzmKPN2*, *wztKPN2*, *yohH*, *liac*;

(xi) *Klebsiella oxytoca* including gene probes derived from *cymA*, *cymD*, *cymE*, *cymH*, *cymI*, *cymJ*, *ddrA*, *fdt-1*, *fdt-2*, *fdt-3*, *gatY*, *hydH*, *masA*, *nasA*, *nasE*, *nasF*, *pehX*, *pelX*, *tagH*, *tagK*, *tagT*;

(xii) *Pseudomonas aeruginosa* including gene probes derived from *glpR*, *lasRb*, *OrfX*, *pa0260*, *pa0572*, *pa0625*, *pa0636*, *pa1046*, *pa1069*, *pa1846*, *pa3866*, *pa4082*, *pilAp*, *PilAp2*, *pilC*, *PstP*, *purK*, *uvrDII*, *vsml*, *vsmR*, *xcpX*;

(xiii) *Streptococcus pneumoniae* including gene probes derived from *cap1EStrepneu*, *cap1FStrepneu*, *cap1GStrepneu*, *cap3AStrepneu*, *cap3BStrepneu*, *celAStrepneu*, *celBStrepneu*, *cglAStrepneu*, *cglBStrepneu*, *cglCStrepneu*, *cglDStrepneu*, *cinA*, *cps14EStrepneu*, *cps14FStrepneu*, *cps14GStrepneu*, *cps14HStrepneu*, *cps19aHStrepneu*, *cps19aKStrepneu*, *cps19aGStrepneu*, *cps23fGStrepneu*, *dexB*, *dinF*, *1760Strepneu*, *acyPStrepneu*, *endAStrepneu*, *exoAStrepneu*, *exp72*, *fnlAStrepneu*, *fnlBStrepneu*, *fnlCStrepneu*, *gct18Strepneu*, *hexB1*, *hftsHStrepneu*, *immunofrag1Strepneu*, *immunofrag2Strepneu*, *immunofrag3Strepneu*, *KdtBStrepneu*, *lyAStrepneu*, *pcpBStrepneu*, *pflCStrepneu*, *plpA*, *prtA1Strepneu*, *pspC1Strepneu*, *pspC2*, *purRStrepneu*, *pyrDAStrepneu*, *SP0828Strepneu*, *SP0830Strepneu*, *SP0833Strepneu*, *SP0837_38Strepneu*, *SP0839Strepneu*, *ugdStrepneu*, *uncC*, *vicXStrepneu*, *wchA6bStrepneu*, *wci4Strepneu*, *wciK4Strepneu*, *wciL4Strepneu*, *wciN6bStrepneu*, *wciO6bStrepneu*, *wciP6bStrepneu*, *wciY18Strepneu*, *wzdbStrepneu*, *wze6bStrepneu*, *wzy18Strepneu*, *wzy4Strepneu*, *wzy6bStrepneu*, *xpt*;

(xiv) *Streptococcus agalactiae* including gene probes derived from *cpsA1Strgal*, *cpsB1Strgal*, *cpsC1Strgal*, *cpsD1Strgal*, *cpsE1Strgal*, *cpsG1Strgal*, *cpsI1Strgal*, *cpsJ1Strgal*, *cpsK1Strgal*, *cpsM1Strgal*, *cpsY1Strgal*, *cylBStraga*, *cylEStraga*, *cylFStraga*, *cylHStraga*, *cylI1Straga*, *cylJ1Straga*, *cylK1Straga*, *0487Straga*, *0488Straga*, *0493Straga*, *0495Straga*, *0498Straga*, *0500Straga*, *0502Straga*, *0504Straga*, *folDStraga*, *neuA1Strgal*, *neuB1Strgal*, *neuC1Strgal*, *neuD1Strgal*, *recN1Straga*, *ileS1Straga*;

(xv) *Streptococcus pyogenes* including gene probes derived from *cyclStrpyog*, *fah_rph_hlo_Strpyog*, *int*, *int315.5*, *murE1Strpyog*, *oppA*, *oppC1Strpyog*, *oppD*, *SPy0382Strpyog*, *SPy0390Strpyog*, *SPyM3_1351*, *vicX1Strpyog*;

(xvi) *Streptococcus viridans* including gene probes derived from *573Strpmut*, *580SStrpmut*, *581_582SStrpmut*, *584SStrpmut*, *dltA1Strmut*, *dltB1Strmut*, *dltCpx1Strmut*, *dltD1Strmut*, *lich1Strbov*, *lytR1Strpmut*, *lytS1Strpmut*, *pepQ1Strmut*, *pflC1Strmut*, *recN1Strpmut*, *ytqB1Strmut*;

(xvii) *Proteus mirabilis* including gene probes derived from *atfA*, *atfB*, *atfC*, *ccmPrmi1*, *cyaPrmi*, *aad*, *flfB*, *flfD*, *flfN*, *flhD*, *floA*, *ftsK*, *gstB*, *hemCPrmi*, *hemDPrmi*, *hev*, *katA*, *lpp1*, *menE*, *mfd*, *nrpA*, *nrpB*, *nrpG*, *nrpS*, *nrpT*, *nrpU*, *pat*, *pmfA*, *pmfC*, *pmfE*, *ppaA*, *rsbA*, *rsbC*, *speB*, *stmA*, *stmB*, *terA*, *terD*, *umoA*, *umoB*, *umoC*, *ureR*, *xerC*, *ygbA*;

(xviii) *Proteus vulgaris* including gene probes derived from *envZPrvu*, *frdC*, *frdD*, *infBPrvu*, *lad*, *tna2*.

[0052] Preferably, the virulence specific set of gene probes for each species to be identified and characterised is selected from virulence gene probes (b) for

(i) *Staphylococcus aureus* including gene probes derived from *bsaE*, *bsaG*, *cap5h*, *cap5i*, *cap5j*, *cap5k*, *cap8H*, *cap8I*, *cap8J*, *cap8K*, *I-hld*, *I-hysA*, *I-IgGbg*, *EDIN*, *eta*, *etb*, *hglA*, *hglB*, *hglC*, *hla*, *hlyB*, *lukF*, *lukS*, *NAG*, *sak*, *sea*, *seb*, *sec1*, *seg*, *seh*, *sel*, *set15*, *set6*, *set7*, *set8*, *sprV8*, *tst*, *I-sdrC*, *I-sdrD*, *I-sdrE*;

(ii) *Escherichia coli* including gene probes derived from *b1202*, *eae*, *eltB*, *escR*, *escT*, *escU*, *espB*, *fes*, *fteA*, *hlyA*, *hlyB*, *iucA*, *iucB*, *iucC*, *papG*, *rfaE*, *shuA*, *SLTII*, *toxALTPA*, *VT2vaB*;

(iii) *Staphylococcus epidermidis* including gene probes derived from *gcaD*, *hld_orf5*, *icaC*, *icaD*, *icaR*, *psm_beta1and2*, *purR*, *spoVG*, *yabJ*;

(iv) *Staphylococcus haemolyticus* including gene probes derived from *lipShaemolyt*;

(v) *Staphylococcus lugdunensis* including gene probes derived from *fblStalugd*, *slushABCStalugd*;

(vi) *Staphylococcus warneri* including gene probes derived from *gehAStwar*;

(vii) *Candida albicans* including gene probes derived from *CCN1*, *CDC28*, *CLN2*, *CPH1*, *CYB1*, *EFG1*, *MNT1*, *RBF1*, *RBF1*, *RIM101*, *RIM8*, *SEC14*, *SEC4*, *TUP1*, *YPT1*, *ZNF1* *CZF1*;

(viii) *Enterococcus faecalis* including gene probes derived from *asa1*, *asp1*, *cgh*, *cylA*, *cylB*, *cyll*, *cyll_cylS*, *cyllM*, *ace*, *ef00108*, *ef00109*, *ef0011*, *ef00113*, *ef0012*, *ef0022*, *ef0031*, *ef0032*, *ef0040*, *ef0058*, *enlA*, *esa*, *esp*, *gelE*, *groEL*, *groES*, *rt1*, *sala*, *salb*, *sea1*, *sep1*, *vicK*, *yyeH*, *yycl*, *yycJ*;

(ix) *Enterococcus faecium* including gene probes derived from *entA*, *entL*, *entD*, *entR*, *oep*, *sagA*;

(x) *Klebsiella pneumonia* including gene probes derived from *cim*, *aldA*, *hemly*, *pSL017*, *pSL020*, *rcaA*, *rmlC*, *rmlD*, *waaG*, *wbbD*, *wbbM*, *wbbN*, *wbdA*, *wbdC*, *wztKpn*, *yibD*;

(xi) *P. aeruginosa* including gene probes derived from *aprA*, *aprE*, *ctx*, *algB*, *algN*, *algR*, *ExoS*, *fpvA*, *lasRa*, *lipA*,

lipH, *Orf159*, *Orf252*, *pchG*, *PhzA*, *PhzB*, *PLC*, *plcN*, *plcR*, *pvdD*, *pvdF*, *pyocinS1*, *pyocinS1im*, *pyocinS2*, *pys2*, *rbf303*, *rhlA*, *rhlB*, *rhlR*, *TnAP41*, *toxA*;

(xii) *Streptococcus pneumoniae* including gene probes derived from *igaStrpneu*, *lytA*, *nanA*, *nanBStrpneu*, *pcpC-Strpneu*, *ply*, *prtAStrpneu*, *pspA*, *SP0834Strpneu*, *sphtraStrpneu*, *wciJStrpneu*, *wziyStrpneu*, *wzxStrpneu*;

(xiii) *Streptococcus agalactiae* including gene probes derived from *CAMPfactor*, *0499Straga*, *hylStragal*, *lipStragal*;

(xiv) *Streptococcus pyogenes* including gene probes derived from *DNaseIStropyog*, *fba2Stropyog*, *fhuAStropyog*, *fhuB1Stropyog*, *fhuDStropyog*, *fhuGStropyog*, *hylA*, *hylP*, *hylp2*, *oppB*, *ropB*, *scpAStropyog*, *sloStropyog*, *smez-Strpyog*, *sof*, *speA*, *speB2Stropyog*, *speCStropyog*, *speJStropyog*, *srtBStropyog*, *srtCStropyog*, *srtEStropyog*, *srtFStropyog*, *srtGStropyog*, *srtIStropyog*, *srtKStropyog*, *srtRStropyog*, *srtTStropyog*, *vicKStropyog*;

(xvi) *Streptococcus viridans* including gene probes derived from *hlyXStrmut*, *igaStrmitis*, *igaStrsanguis*, *perMStrmut*;

(xvii) *Proteus mirabilis* including gene probes derived from *flaA*, *laD*, *fliA*, *hpmA*, *hpmB*, *lpsPrmi*, *mrpA*, *mrpB*, *mrpC*, *mrpD*, *mrpE*, *mrpF*, *mrpG*, *mrpH*, *mrpI*, *mrpJ*, *patA*, *putA*, *uca*, *ureDPrmi*, *ureEPrmi*, *ureFPrmi*, *zapA*, *zapB*, *zapD*, *zapE*.

[0053] Preferably, the resistance specific set of gene probes is selected from resistance gene probes (c) derived from genes coding for

(i) beta-lactams resistance including gene probes derived from *blaIMP-7*, *meclSepid*, *blaOXA-10*, *blaB*, *ampC*, *I-blaR*, *blaOXA-32*, *bla-CTX-M-22*, *pbp2aStrpneu*, *blaSHV-1*, *blaOXA-2*, *blaRShaemolyt*, *blaIMP-7*, *I-mecR*, *blaOXY*, *dacCStropyog*, *femA*, *mecA*, *blaShaemolyt*, *blavim*, *pbp2b*, *pbp2prim*, *eSepid*, *pbp2x*, *pbp3Saureuc*, *pbp4*, *pbp5Efaecium*, *pbpC*, *I-mecI*, *pbp1a*, *I-blaI*, *blaTEM-106*, *blaOXY-KLOX*, *ftsWEF*, *fmhB*, *cumA*, *femBShaemolyt*, *blaPER-1*, *bla_FOX-3*, *blaA*, *psrb*, *fmhA*, *mecR1Sepid*, *blaZ*, *blaOXA-1*, *fox-6*, *blaPrmi*;

(ii) aminoglycosides resistance including gene probes derived from *aacA_aphDStwar*, *aacC1*, *aacC2*, *strB*, *aadA*, *aadB*, *aadD*, *aacA4*, *strA*, *aph-A3*, *aacC1*, *aacA4*, *aacA-aphD*, *I-spc*, *aphA3*;

(iii) macrolides-lincosamines-streptogramins resistance including gene probes derived from *ermC*, *linB*, *satSA*, *mdrSA*, *I-linA*, *ermB*, *ermA*, *satA*, *msrA*, *mphBM*, *mefA*, *mrX*;

(iv) trim ethoprim resistance including gene probes derived from *dfrA*, *dfrStrpneu*;

(v) chloramphenicol resistance including gene probes derived from *cat*, *catEfaecium*, *cmlA5*;

(vi) tetracyclines resistance including gene probes derived from *tetAJ*, *tetL*, *tetM*

(vii) glycopeptides resistance including gene probes derived from *vanH(tn)*, *vanA*, *vanHB2*, *vanR*, *vanRB2*, *vanS(tn)*, *vanSB2*, *vanVIB2*, *ddl*, *ble*, *vanXB2*, *vanY(tn)*, *vanYB2*, *vanB*, *vanZ(tn)*, *vanC-2*, *vanX(tn)*;

(viii) multiple target resistance including gene probes derived from *acrB*, *m exB*, *I-qacA*, *sull*, *sul*, *cadBStalugd*, *mexA*, *acrR*, *emeA*, *acrA*, *rtn*, *abcXStrpmut*, *qacEdelta1*, *elkT-abcA*, *1-cadA*, *albA*, *wzm*, *msrCb*, *nov*, *wzt*, *wbbI*, *norA23*, *mexR*, *arr2*, *mreA*, *I-cadC*, *uvrA*;

(ix) fungicides resistance, especially *C. albicans* fungicide resistance, including gene probes derived from *CRD2*, *CDR1*, *MET3*, *FET3*, *FTR2*, *MDR1-7*, *ERG11*, *SEC20*.

[0054] Furthermore, the microarray may contain a set of gene probes which serve as controls. Preferably, such a set of control gene probes is selected from group (d) consisting of control gene probes coding for

(i) negative controls, namely DNA sequences which will not hybridise with human DNA or bacterial, fungal or the microbial target DNA under the hybridisation conditions of the method of present invention, including gene probes derived neither from fungal, bacterial or target microbial nor from human genes, preferably gene probes derived from plant genes, more preferably from *Arabidopsis thaliana* or *Glycine max* genes;

(ii) positive controls including segments of ribosomal DNA from bacterial target species, preferably 16S DNA, and segments of conserved human genes;

(iii) positive controls specific for DNA added to the sample ("spiked DNA"), namely DNA sequences which will not hybridise with human DNA or the fungal, bacterial or microbial target DNA under the hybridisation conditions of the method of present invention, including gene probes derived neither from fungal, bacterial or target microbial nor from human genes, preferably gene probes derived from mouse or amoeba genes, most preferably from *Mus musculus* or *Dictyostelium discoideum* genes.

[0055] These control gene probes are necessary to

- detect non-specific hybridisation;
- optimise hybridisation conditions and image acquisition and analysis;
- provide positive controls for the quality of probe preparation, hybridisation and detection; and/or
- control technical aspects of the entire detection procedure including labelling, hybridisation and detection steps.

[0056] In a preferred aspect of embodiment (1), the microarray contains DNA sequences selected from the group consisting of the SEQ ID NOs: 1-918, complementary sequences thereto, addition mutants, deletion mutants, substitution mutants and homologues thereof as gene probes.

[0057] More preferably, in order to identify a specific microbial species, bacterial species or group of bacteria, the gene probes of group (a) are selected from SEQ ID NO: 1-99, 142-152, 174-199, 209-214, 216-219, 222-229, 231-291, 308-342, 377-393, 399-431, 449-490, 523-591, 606-639, 645-656, 687-701, 706-749 and 776-781 (compare Tab. 1). Equally, in order to determine virulence of a specific microorganism or bacterial species, the gene probes of group (b) are selected from SEQ ID NO: 100-141, 153-173, 200-208, 215, 220-221, 230, 292-307, 343-376, 394-398, 432-448, 491-522, 592-605, 640-644, 657-686, 702-705, 750-775 and 782-784 (compare Tab. 1). Equally, in order to determine antibiotic resistance of a specific microbial or bacterial species, the gene probes of group (c) are selected from SEQ ID NO: 785-918, preferably from SEQ ID NO: 785-882 (compare Tab. 1). Equally, in order to provide the required controls (negative, positive, hybridisation controls), the gene probes of group (d) are selected from SEQ ID NO: 919-947, preferably from SEQ ID NO: 919-925 and 944-947, more preferably from SEQ ID NO: 919 and 921 (compare Tab. 1).

[0058] Tab. 1: Preferred gene probes for species identification, virulence determination and resistance determination of microorganisms

a) probes for species identification

SEQ ID NO	Probe
<i>Staphylococcus aureus</i> identification	
1	cataSaur_1_1
2	cataSaur_1_2
3	clfA_1_1
4	clfB_1_1
5	coa_1_1
6	coa_1_2
7	l-clpC_1_1
8	l-clpP_1_1
9	l-ctaA_1_1
10	l-ctsR_1_1
11	l-dltA_1_1
12	l-dltB_1_1
13	l-dltC_1_1
14	l-dnaK_1_1
15	l-elkT_1_1
16	l-femD_1_1
17	l-glnA_1_1
18	l-glnR_1_1
19	l-qrlA_1_1
20	l-grlB_1_1
21	l-groEL_1_1
22	l-groES_1_1
23	l-hemA_1_1
24	l-hemE_1_1
25	l-hemH_1_1
26	l-hemL_1_1

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe
<i>Staphylococcus aureus</i> identification	
27	I-hemY_1_1
28	I-lepA_1_1
29	I-lrgA_1_1
30	I-lrgB_1_1
31	I-lytM_1_1
32	I-menB_1_1
33	I-menD_1_1
34	I-menE_1_1
35	I-menF_1_1
36	I-mreB_1_1
37	I-mreR_1_1
38	I-mutL_1_1
39	I-mutS_1_1
40	I-NAG_1_1
41	I-pbg_1_1
42	I-pbpF_1_1
43	I-pdhB_1_1
44	I-pdhC_1_1
45	I-rsbU_1_1
46	I-rsbV_1_1
47	I-rsbW_1_1
48	I-sgp_1_1
49	I-sirR_1_1
50	I-sodA_1_1
51	I-sodB_1_1
52	I-sstA_1_1
53	I-sstB_1_1
54	I-sstC_1_1
55	I-sstD_1_1
56	I-trx_1_1
57	I-yhiN_1_1
58	epiP-bsaP_1_1
59	geh_1_1
60	gyrA_1_1
61	gyrB_1_1
62	hemB_1_1
63	hemC_1_1

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe
<i>Staphylococcus aureus</i> identification	
64	hemD_1_1
65	hemN_1_1
66	hsdS_1_1
67	hsdS_2_1
68	lip_1_1
69	menC_1_1
70	murC_1_1
71	nuc_1_1
72	pdhD_1_1
73	rpoB_1_1
74	SAV0431_1_1
75	SAV0439_1_1
76	SAV0440_1_1
77	SAV0441_1_1
78	sigB_1_1
79	spa_1_2
80	sstC_1_1
81	tag_1_1
82	tyrA_1_1
83	l-aroC_1_1
84	l-aroA_1_1
85	l-cna_1_1
86	l-ebpS_1_1
87	l-eno_1_1
88	l-fbpA_1_1
89	l-fib_1_1
90	l-fnbB_1_1
91	l-srtA_1_1
92	l-stpC_1_1
93	l-fnbA_1_1
94	l-spa_1_1
95	l-aroE_1_1
96	l-aroF_1_1
97	l-aroG_1_1
98	l-asp23_1_1
99	l-atl_1_1

EP 1 770 171 A1

(continued)

<i>Escherichia coli</i> identification	
142	b1169_1_1
143	envZ_1_1
144	fliCb_1_1
145	nfrB_1_1
146	nlpA_1_1
147	piAe_1_1
148	yacH_1_1
149	yagX_1_1
150	ycdS_1_1
151	yciQ_1_1
152	ymcA_1_1
<i>Staphylococcus epidermidis</i> identification	
174	ardeSE0106_1_1
175	ardeSE0107_1_1
176	aroiSE0105_1_1
177	atlE_1_1
178	agrB_1_1
179	agrC_1_1
180	alphSE1368_1_1
181	gad_1_1
182	glucSE1191_1_1
183	hsp10_1_1
184	icaA_1_1
185	icaB_1_1
186	mvaSSepid_1_1
187	nitreSE1972_1_1
188	nitreSE1974_1_1
189	nitreSE1975_1_1
190	oiamtSE1209_1_1
191	ORF1Sepid_1_1
192	ORF3bSepid_1_1
193	qacR_1_1
194	sin_1_1
195	ureSE1861_1_1
196	ureSE1863_1_1
197	ureSE1864_1_1
198	ureSE1865_1_1

EP 1 770 171 A1

(continued)

<i>Staphylococcus epidermidis</i> identification	
199	ureSE1867_1_1
<i>Staphylococcus haemolyticus</i> identification	
209	folQShaemolyt_1_1
210	mvaCShaemolyticus_1_1
211	mvaDShaemolyt_1_1
212	mvaK1 Shaemolyticus_1_1
213	mvaSShaemolyticus_1_1
214	RNApolsigm_1_1
<i>Staphylococcus lugdunensis</i> identification	
216	agrB2Stalugd_1_1
217	agrC2Stalugd_1_1
218	agrCStalugd_1_1
219	slamStalugd_1_1
<i>Staphylococcus saprophyticus</i> identification	
222	RNApolsigmSsapro_1_1
223	RNApolsigmSsapro_1_2
<i>Staphylococcus warneri</i> identification	
224	msrw1Stwar_1_1
225	nukMStwar_1_1
226	proDStwar_1_1
227	proMStwar_1_1
228	sigrpoStwar_1_1
229	tnpStwar_1_1
<i>Candida albicans</i> identification	
231	ARG56_1_1
232	ASL43f_1_1
233	BGL2_1_1
234	CACHS3_1_1
235	CCT8_1_1
236	CDC37_1_1
237	CEF3_1_1
238	CHS1_1_1
239	CHS2_1_1

EP 1 770 171 A1

(continued)

<i>Candida albicans</i> identification	
240	CHS4_1_1
241	CHS5_1_1
242	CHT1_1_1
243	CHT2_1_1
244	CHT4_1_1
245	CSA1_1_1
246	5triphosphatase_1_1
247	AAF1_1_1
248	ADH1_1_1
249	ALS1_1_1
250	ALS7_1_1
251	EDT1_1_1
252	ELF_1_1
253	ESS1_1_1
254	FAL1_1_1
255	GAP1_1_1
256	GNA1_1_1
257	GSC1_1_1
258	GSL1_1_1
259	HIS1_1_1
260	HTS1_1_1
261	HWP1_2_1
262	HYR1_1_1
263	INT1a_1_1
264	KRE15f_1_1
265	KRE6_1_1
266	KRE9_1_1
267	MIG1_1_1
268	MLS_1_1
269	MP65_1_1
270	NDE1_1_1
271	PFK2_1_1
272	PHR1_1_1
273	PHR2_1_1
274	PHR3_1_1
275	PRA1_1_1
276	PRS_1_1
277	RBT1_1_1

EP 1 770 171 A1

(continued)

<i>Candida albicans</i> identification	
278	RBT4_1_1
279	RHO1_1_1
280	RNR1_1_1
281	RPB7_1_1
282	RPL13_1_1
283	RVS167_1_1
284	SHA3_1_1
285	SKN1_1_1
286	SRB1_1_1
287	TCA1_1_1
288	TRP1_1_1
289	YAE1_1_1
290	YRB1_1_1
291	YST1exon2_1_1
<i>Enterococcus faecalis</i> identification	
308	arcA_1_1
309	arcC_1_1
310	bkdA_1_1
311	cad_1_1
312	camE1_1_1
313	csrA_1_1
314	dacA_1_1
315	dfr_1_1
316	dhoD1a_1_1
317	ABC-eltA_1_1
318	agrBfs_1_1
319	agrCfs_1_1
320	dnaE_1_1
321	ebsA_1_1
322	ebsB_1_1
323	eep_1_1
324	efaR_1_1
325	gls24_glsB_1_1
326	gph_1_1
327	gyrAEf_1_1
328	metEf_1_1
329	mntHCb2_1_1

EP 1 770 171 A1

(continued)

<i>Enterococcus faecalis</i> identification	
330	mob2_1_1
331	mvaD_1_1
332	mvaE_1_1
333	parC_1_1
334	pcfG_1_1
335	phoZ_1_1
336	polC_1_1
337	ptb_1_1
338	recS1_1_1
339	rpoN_1_1
340	tms_1_1
341	tyrDC_1_1
342	tyrS_1_1
<i>Enterococcus faecium</i> identification	
377	bglB_1_1
378	bglR_1_1
379	bglS_1_1
380	efmA_1_1
381	efmB_1_1
382	efmC_1_1
383	mreC_1_1
384	mreD_1_1
385	mvaDEfaecium_1_1
386	mvaEEfaecium_1_1
387	mvaK1Efaecium_1_1
388	mvaK2Efaecium_1_1
389	mvaSEfaecium_1_1
390	orf3_4Efaeciumb_1_1
391	orf6_7Efaecium_1_1
392	orf7_8Efaecium_1_1
393	orf9_10Efaecium_1_1
<i>Klebsiella pneumoniae</i> identification	
399	atsA_1_1
400	atsB_1_1
401	budC_1_1
402	citA_1_1

EP 1 770 171 A1

(continued)

<i>Klebsiella pneumoniae</i> identification	
403	citW_1_1
404	citX_1_1
405	dalD_1_1
406	dalK_1_1
407	dalT_1_1
408	acoA_1_1
409	acoB_1_1
410	acoC_1_1
411	ahlK_1_1
412	fimK_1_1
413	glfKPN2_1_1
414	ltrA_1_1
415	mdcC_1_1
416	mdcF_1_1
417	mdcH_1_1
418	mrkA_1_1
419	mtrK_1_1
420	nifF_1_1
421	nifK_1_1
422	nifN_1_1
423	tyrP_1_1
424	ureA_1_1
425	wbbO_1_1
426	wza_1_1
427	wzb_1_1
428	wzmKPN2_1_1
429	wztKPN2_1_1
430	yojH_1_1
431	liac_1_1
<i>Klebsiella oxytoca</i> identification	
449	cymA_1_1
450	cymD_1_1
451	cymE_1_1
452	cymH_1_1
453	cymI_1_1
454	cymJ_1_1
455	ddrA_1_1

EP 1 770 171 A1

(continued)

<i>Klebsiella oxytoca</i> identification	
456	fdt-1_1_1
457	fdt-2_1_1
458	fdt-3_1_1
459	gatY_1_1
460	hydH_1_1
461	masA_1_1
462	nasA_1_1
463	nasE_1_1
464	nasF_1_1
465	pehX_1_1
466	pelX_1_1
467	tagH_1_1
468	tagK_1_1
469	tagT_1_1
<i>Pseudomonas aeruginosa</i> identification	
470	glpR_1_1
471	lasRb_1_1
472	OrfX_1_1
473	pa0260_1_1
474	pa0572_1_1
475	pa0625_1_1
476	pa0636_1_1
477	pa1046_1_1
478	pa1069_1_1
479	pa1846_1_1
480	pa3866_1_1
481	pa4082_1_1
482	pilAp_1_1
483	PilAp2_1_1
484	pilC_1_1
485	PstP_1_1
486	purK_1_1
487	uvrDII_1_1
488	vsml_1_1
489	vsmR_1_2
490	xcpX_1_1
<i>Streptococcus pneumoniae</i> identification	
523	cap1EStrpneu_1_1

EP 1 770 171 A1

(continued)

<i>Streptococcus pneumoniae</i> identification	
524	cap1FStrpneu_1_1
525	cap1GStrpneu_1_1
526	cap3AStrpneu_1_1
527	cap3BStrpneu_1_1
528	celAStrpneu_1_1
529	celBStrpneu_1_1
530	cglAStrpneu_1_1
531	cglBStrpneu_1_1
532	cglCStrpneu_1_1
533	cglDStrpneu_1_1
534	cinA_1_1
535	cps14EStrpneum_1_1
536	cps14FStrpneum_1_1
537	cps14GStrpneum_1_1
538	cps14HStrpneum_1_1
539	cps19aHStrpneum_1_1
540	cps19aIStrpneum_1_1
541	cps19aKStrpneum_1_1
542	cps19fGStrpneum_1_1
543	cps23fGStrpneum_1_1
544	dexB_1_1
545	dinF_1_1
546	1760Strpneu_1_1
547	acyPStrpneu_1_1
548	endAStrpneu_1_1
549	exoAStrpneu_1_1
550	exp72_1_1
551	fnIAStrpneu_1_1
552	fnIBStrpneu_1_1
553	fnICStrpneu_1_1
554	gct18Strpneum_1_1
555	hexB1_1_1
556	hftsHstrpneu_1_1
557	immunofrag1Strpneu_1_1
558	immunofrag2Strpneu_2_1
559	immunofrag3Strpneu_2_1
560	kdtBStrpneu_1_1
561	lysAStrpneu_1_1

EP 1 770 171 A1

(continued)

<i>Streptococcus pneumoniae</i> identification	
562	pcpBStrpneu_1_1
563	pflCStrpneu_1_1
564	plpA_1_1
565	prtA1Strpneu_1_1
566	pspC1Strpneu_1_1
567	pspC2_1_1
568	purRStrpneu_1_1
569	pyrDAStrpneu_1_1
570	SP0828Strpneu_1_1
571	SP0830Strpneu_1_1
572	SP0833Strpneu_1_1
573	SP0837_38Strpneu_1_1
574	SP0839Strpneu_1_1
575	ugdStrpneu_1_1
576	uncC_1_1
577	vicXStrpneu_1_1
578	wchA6bStrpneu_1_1
579	wci4Strpneu_1_1
580	wciK4Strpneu_1_1
581	wciL4Strpneu_1_1
582	wciN6bStrpneu_1_1
583	wciO6bStrpneu_1_1
584	wciP6bStrpneu_1_1
585	wciY18Strpneu_1_1
586	wzdbStrpneu_1_1
587	wze6bStrpneu_1_1
588	wzy18Strpneu_1_1
589	wzy4Strpneu_1_1
590	wzy6bStrpneu_1_1
591	xpt_1_1
<i>Streptococcus agalactiae</i> identification	
606	cpsA1Strgal_1_1
607	cpsB1Strgal_1_1
608	cpsC1Strgal_1_1
609	cpsD1Strgal_1_1
610	cpsE1Strgal_1_1
611	cpsG1Strgal_1_1
612	cpsI1Strgal_1_1

EP 1 770 171 A1

(continued)

<i>Streptococcus agalactiae</i> identification	
613	cpsJStragal_1_1
614	cpsKStragal_1_1
615	cpsMStragal_1_1
616	cpsYStragal_1_1
617	cpsYStragal_2_1
618	cylBStraga_1_1
619	cylEStraga_1_1
620	cylFStraga_1_1
621	cylHStraga_1_1
622	cylIStraga_1_1
623	cylJStraga_1_1
624	cylKStraga_1_1
625	0487Straga_1_1
626	0488Straga_1_1
627	0493Straga_1_1
628	0495Straga_1_1
629	0498Straga_1_1
630	0500Straga_1_1
631	0502Straga_1_1
632	0504Straga_1_1
633	foIDStraga_1_1
634	neuA1Strgal_1_1
635	neuB1Strgal_1_1
636	neuC1Strgal_1_1
637	neuD1Strgal_1_1
638	recNStraga_1_1
639	ileSStraga_1_1
<i>Streptococcus pyogenes</i> identification	
645	cyclStrpyog_1_1
646	fah_rph_hlo_Strpyog_1_1
647	int_1_1
648	int315.5_1_1
649	murEStrpyog_1_1
650	oppA_1_1
651	oppCStrpyog_1_1
652	oppD_1_1
653	SPy0382Strpyog_1_1
654	SPy0390Strpyog_1_1

EP 1 770 171 A1

(continued)

<i>Streptococcus pyogenes</i> identification	
655	SpyM3_1351_1_1
656	vicXStrpyog_1_1
<i>Streptococcus viridans</i> identification	
687	573Stprmut_1_1
688	580SSstprmut_1_1
689	581_582SSstprmut_1_1
690	584SSstprmut_1_1
691	dltAStrmut_1_1
692	dltBStrmut_1_1
693	dltCpx1Strmut_1_1
694	dltDStrmut_1_1
695	lichStrbov_1_1
696	lytRStprmut_1_1
697	lytSStprmut_1_1
698	pepQStrrmut_1_1
699	pflCStrmut_1_1
700	recNStprmut_1_1
701	ytqBStrmut_1_1
<i>Proteus mirabilis</i> identification	
706	atfA_1_1
707	atfB_1_1
708	atfC_1_1
709	ccmPrmi1_1_1
710	cyaPrmi_1_1
711	aad_1_1
712	flfB_1_1
713	flfD_1_1
714	flfN_1_1
715	flhD_1_1
716	floA_1_1
717	ftsK_1_1
718	gstB_1_1
719	hemCPrmi_1_1
720	hemDPrmi_1_1
721	hev_1_1
722	katA_1_1
723	lpp1_1_1
724	menE_1_1

EP 1 770 171 A1

(continued)

<i>Proteus mirabilis</i> identification	
725	mfd_1_1
726	nrpA_1_1
727	nrpB_1_1
728	nrpG_1_1
729	nrpS_1_1
730	nrpT_1_1
731	nrpU_1_1
732	pat_1_1
733	pmfA_1_1
734	pmfC_1_1
735	pmfE_1_1
736	ppaA_1_1
737	rsbA_1_1
738	rsbC_1_1
739	speB_1_1
740	stmA_1_1
741	stmB_1_1
742	terA_1_1
743	terD_1_1
744	umoA_1_1
745	umoB_1_1
746	umoC_1_1
747	ureR_1_1
748	xerC_1_1
749	ygbA_1_1
<i>Proteus vulgaris</i> identification	
776	envZPrvu_1_1
777	frdC_1_1
778	frdD_1_1
779	infBPrvu_1_1
780	lad_1_1
781	tna2_1_1

b) virulence gene probes

SEQ ID NO	Probe
<i>Staphylococcus aureus</i> virulence	
100	bsaE_1_1
101	bsaG_1_1

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe
<i>Staphylococcus aureus</i> virulence	
102	cap5h_1_1
103	cap5i_1_1
104	cap5j_1_1
105	cap5k_1_1
106	cap8H_1_1
107	cap8I_1_1
108	cap8J_1_1
109	cap8K_1_1
110	l-hld_1_1
111	l-hysA_1_1
112	l-IgGbg_1_1
113	EDIN_1_1
114	eta_1_1
115	etb_1_1
116	hglA_1_1
117	hglA_2_1
118	hglB_1_1
119	hglC_2_1
120	hla_1_1
121	hIb_1_2
122	lukF_1_1
123	lukS_1_1
124	lukS_2_1
125	NAG_1_1
126	sak_1_1
127	sea_1_1
128	seb_1_1
129	sec1_1_1
130	seg_1_1
131	seh_1_1
132	sel_1_1
133	set15_1_1
134	set6_1_1
135	set7_1_1
136	set8_1_1
137	sprV8_1_1
138	tst_1_1

EP 1 770 171 A1

(continued)

	SEQ ID NO	Probe
5	<i>Staphylococcus aureus</i> virulence	
	139	l-sdrC_1_1
	140	l-sdrD_1_1
	141	l-sdrE_1_1
10	<i>Escherichia coli</i> virulence	
	153	b1202_1_1
	154	eae_1_1
15	155	eltB_1_1
	156	escR_1_1
	157	escT_1_1
	158	escU_1_1
20	159	espB_1_1
	160	fes_1_1
	161	fes_2_1
25	162	fteA_1_1
	163	hlyA_1_1
	164	hlyB_1_1
	165	iucA_1_1
30	166	iucB_1_1
	167	iucC_1_1
	168	papG_1_1
35	169	rfbE_1_1
	170	shuA_1_1
	171	SLTII_1_1
	172	toxA-LTPA_1_1
40	173	VT2vaB_1_1
	<i>Staphylococcus epidermidis</i> virulence	
	200	gcaD_1_1
45	201	hld_orf5_1_1
	202	icaC_1_1
	203	icaD_1_1
	204	icaR_1_1
50	205	psm_beta1and2_1_1
	206	purR_1_1
	207	spoVG_1_1
55	208	yabJ_1_1
	<i>Staphylococcus haemolyticus</i> virulence	
	215	lipShaem olyt_1_1

EP 1 770 171 A1

(continued)

<i>Staphylococcus lugdunensis</i> virulence	
220	slushABCStalugd_1_1
221	fblStalugd_1_1
<i>Staphylococcus warneri</i> virulence	
230	gehASTwar_1_1
<i>Candida albicans</i> virulence	
292	CCN1_1_1
293	CDC28_1_1
294	CLN2_1_1
295	CPH1_1_1
296	CYB1_1_1
297	EFG1_1_1
298	MNT1_1_1
299	RBF1_1_1
300	RBF1_2_1
301	RIM101_1_1
302	RIM8_1_1
303	SEC14_1_1
304	SEC4_1_1
305	TUP1_1_1
306	YPT1_1_1
307	ZNF1CZF1_2_1
<i>Enterococcus faecalis</i> virulence	
343	asa1_1_1
344	asp1_1_1
345	cgh_1_1
346	cylA_1_1
347	cylB_1_1
348	cylI_1_1
349	cylL_cylS_1_1
350	cylM_1_1
351	ace_1_1
352	ef00108_1_1
353	ef00109_1_1
354	ef0011_1_1
355	ef00113_1_1
356	ef0012_1_1
357	ef0022_1_1
358	ef0031_1_1

EP 1 770 171 A1

(continued)

<i>Enterococcus faecalis</i> virulence	
359	ef0032_1_1
360	ef0040_1_1
361	ef0058_1_1
362	enlA_1_1
363	esa_1_1
364	esp_1_1
365	gelE_1_1
366	groEL_1_1
367	groES_1_1
368	rt1_1_1
369	sala_1_1
370	salb_1_1
371	sea1_1_1
372	sep1_1_1
373	vicK_1_1
374	yycH_1_1
375	yycI_1_1
376	yycJ_1_1
<i>Enterococcus faecium</i> virulence	
394	entA_entl_1_1
395	entD_1_1
396	entR_1_1
397	oep_1_1
398	sagA_1_2
<i>Klebsiella pneumoniae</i> virulence	
432	cim_1_1
433	aldA_1_1
434	aldA_2_1
435	hemly_1_1
436	pSL017_1_1
437	pSL020_1_1
438	rcaA_1_1
439	rmlC_1_1
440	rmlD_1_1
441	waaG_1_1
442	wbbD_1_1
443	wbbM_1_1
444	wbbN_1_1

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

<i>Klebsiella pneumoniae</i> virulence	
445	wbdA_1_1
446	wbdC_1_1
447	wztKpn_1_1
448	yibD_1_1
<i>Pseudomonas aeruginosa</i> virulence	
491	aprA_1_1
492	aprE_1_1
493	ctx_1_2
494	algB_1_1
495	algN_1_1
496	algR_1_1
497	ExoS_1_1
498	fpvA_1_1
499	lasRa_1_1
500	lipA_1_1
501	lipH_1_1
502	Orf159_1_2
503	Orf252_1_1
504	pchG_1_1
505	PhzA_1_1
506	PhzB_1_1
507	PLC_1_1
508	plcN_1_1
509	plcR_1_1
510	pvdD_1_1
511	pvdF_1_2
512	pyocinS1_1_1
513	pyocinS1im_1_1
514	pyocinS2_1_1
515	pys2_1_1
516	pys2_2_1
517	rbf303_1_1
518	rhIA_1_1
519	rhIB_1_1
520	rhIR_1_1
521	TnAP41_1_2
522	toxA_1_1

EP 1 770 171 A1

(continued)

<i>Streptococcus pneumoniae</i> virulence	
592	igaStrpneu_1_1
593	lytA_1_1
594	nanA_1_1
595	nanBStrpneu_1_1
596	pcpCStrpneu_1_1
597	ply_1_1
598	prtAStrpneu_1_1
599	pspA_1_2
600	SP0834Strpneu_1_1
601	SP0834Strpneu_1_2
602	sphtraStrpneu_1_1
603	wciJStrpneu_1_1
604	wziyStrpneu_1_1
605	wzxStrpneu_1_1
<i>Streptococcus agalactiae</i> virulence	
640	CAMPfactor_1_1
641	CAMPfactor_2_1
642	0499Straqa_1_1
643	hylStragal_1_1
644	lipStragal_1_1
<i>Streptococcus pyogenes</i> virulence	
657	DNaseIStrpyog_1_1
658	fba2Strpyog_1_1
659	fhuAStrpyog_1_1
660	fhuB1Strpyog_1_1
661	fhuDStrpyog_1_1
662	fhuGStrpyog_1_1
663	hylA_1_1
664	hylP_1_1
665	hylp2_1_1
666	oppB_1_1
667	ropB_1_1
668	scpAStrpyog_1_1
669	sloStrpyog_1_1
670	smez-4Strpyog_1_1
671	sof_1_1
672	sof_2_1
673	speA_1_1

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

<i>Streptococcus pyogenes</i> virulence	
674	speB2Strpyog_1_1
675	speCStrpyog_1_1
676	speJStrpyog_1_1
677	srtBStrpyog_1_1
678	srtCStrpyog_1_1
679	srtEStrpyog_1_1
680	srtFStrpyog_1_1
681	srtGStrpyog_1_1
682	srtIStrpyog_1_1
683	srtKStrpyog_1_1
684	srtRStrpyog_1_1
685	srtTStrpyog_1_1
686	vicKStrpyog_1_1
<i>Streptococcus viridans</i> virulence	
702	hlyXStrmut_1_1
703	igaStrmitis_1_1
704	igaStrsanguis_1_1
705	perMStrmut_1_1
<i>Proteus mirabilis</i> virulence	
750	flaA_1_1
751	flaD_1_1
752	fliA_1_1
753	hpmA_1_1
754	hpmB_1_1
755	lpsPrmi_1_1
756	mrpA_1_1
757	mrpB_1_1
758	mrpC_1_1
759	mrpD_1_1
760	mrpE_1_1
761	mrpF_1_1
762	mrpG_1_1
763	mrpH_1_1
764	mrpI_1_1
765	mrpJ_1_1
766	patA_1_1
767	putA_1_1
768	uca_1_1

EP 1 770 171 A1

(continued)

<i>Proteus mirabilis</i> virulence	
769	ureDP _{Prmi_1_1}
770	ureEP _{Prmi_1_1}
771	ureFP _{Prmi_1_1}
772	zapA_1_1
773	zapB_1_1
774	zapD_1_1
775	zapE_1_1
<i>Proteus vulgaris</i> virulence	
782	end_1_1
783	pqrA_1_1
784	urg_1_1

c) resistance gene probes

SEQ ID NO	Probe
Beta-lactams resistance	
785	blaIMP-7_1_1
786	mecI _{Sepid_1_1}
787	blaOXA-10_1_2
788	blaB_1_1
789	ampC_1_1
790	I-blaR_1_1
791	blaOXA-32_1_1
792	bla-CTX-M-22_1_1
793	pbp2a _{Strpneu_1_1}
794	blaSHV-1_1_1
795	blaOXA-2_1_1
796	blaR _{Shaemolyt_1_1}
797	blaIMP-7_1_2
798	I-mecR_1_1
799	blaOXY_1_1
800	dacC _{Strpyog_1_1}
801	femA_1_1
802	mecA_1_1
803	bla _{Shaemolyt_1_1}
804	blavim_1_1
805	pbp2b_1_1
806	pbp2prime _{Sepid_1_1}
807	pbp2x_1_1

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe
Beta-lactams resistance	
808	pbp3Saureuc_1_1
809	pbp4_1_1
810	pbp5Efaecium_1_1
811	pbpC_1_1
812	l-mecI_1_1
813	pbp1a_1_1
814	l-blal_1_1
815	blaTEM-106_1_1
816	blaOXY-KLOX_1_1
817	ftsWEF_1_1
818	fmhB_1_1
819	cumA_1_1
820	fem BShaem olyt_1_1
821	blaPER-1_1_1
822	bla_FOX-3_1_1
823	blaA_1_1
824	psrb_1_1
825	fmhA_1_1
826	mecRiSepid_1_1
827	blaZ_1_1
828	blaOXA-1_1_1
829	fox-6_1_1
830	blaPrmi_1_1
Aminoglycosides resistance	
831	aacA_aphDStwar_1_1
832	aacC1_1_2
833	aacC2_1_1
834	strB_1_1
835	aadA_1_1
836	aadB_1_2
837	aadD_1_1
838	aacA4_1_2
839	strA_1_1
840	aph-A3_1_1
841	aacC1_1_1
842	aacA4_1_1
843	aacA-aphD_1_1

EP 1 770 171 A1

(continued)

Aminoglycosides resistance	
844	l-spc_1_1
845	aphA3_1_1
Macrolide-Lincosamide-Streptogramin resistance	
846	ermC_1_1
847	linB_1_1
848	satSA_1_1
849	mdrSA_1_1
850	l-linA_1_1
851	ermB_1_2
852	ermA_1_1
853	satA_1_1
854	msrA_1_1
855	mphBM_1_1
856	mefA_1_1
857	mrX_1_1
Trimethoprim resistance	
858	dfrStrpneu_1_1
859	dfrA_1_1
Chloramphenicol resistance	
860	cmlA5_1_1
861	catEfaecium_1_1
862	cat_1_1
Tetracyclines resistance	
863	tetAJ_1_1
864	tetL_1_1
865	tetM_1_1
Glycopeptides resistance	
866	vanH(tn)_1_1
867	vanA_1_1
868	vanHB2_1_1
869	vanR_1_1
870	vanRB2_1_1
871	vanS(tn)_1_1
872	vanSB2_1_1
873	vanWB2_1_1
874	ddl_1_1
875	ble_1_1
876	vanXB2_1_1

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

Glycopeptides resistance	
877	vanY(tn)_1_1
878	vanYB2_1_1
879	vanB_1_1
880	vanZ(tn)_1_1
881	vanC-2_1_1
882	vanX(tn)_1_1
Other / multiple substances resistance	
883	acrB_1_1
884	mexB_1_2
885	l-qacA_1_1
886	sull_1_1
887	sul_1_1
888	cadBStalugd_1_1
889	mexA_1_1
890	acrR_1_1
891	emeA_1_1
892	acrA_1_1
893	rtn_1_1
894	abcXStrpmut_1_1
895	qacEdelta1_1_1
896	elkT-abcA_1_1
897	l-cadA_1_1
898	albA_1_1
899	wzm_1_1
900	msrCb_1_1
901	nov_1_1
902	wzt_1_1
903	wbbl_1_1
904	norA23_1_1
905	mexR_1_1
906	arr2_1_1
907	mreA_1_1
908	l-cadC_1_1
909	uvrA_1_1
<i>Candida albicans</i> drug resistance	
910	CRD2_1_1
911	CDR1_1_1

EP 1 770 171 A1

(continued)

<i>Candida albicans</i> drug resistance	
912	CDR1_2_1
913	MET3_1_1
914	FET3_1_1
915	FTR2_1_1
916	MDR1-7_1_1
917	ERG11_1_1
918	SEC20_1_1

d) controls and utility genes

SEQ ID NO	Probe
Negative Controls	
919	rbcL_1_1
925	rbcL_1_1 1_2
Positive controls / human genes	
920	LDHA(hu)_1_1
921	GAPD(hu)_1_1
922	b-Act(hu)_1_1
923	ARHGDIA(hu)_1_1
924	PGK1 (hu)_1_1
Positive controls / 16S	
926	16SPa_1_1
927	23SEfaecium_2_1
928	16SStrepypog_1_1
929	16SStrepneu_1_1
930	16SStrepagalactiae_1_1
931	16SEfaecium_1_1
932	16SEfaecium_2_1
933	16SRNAEf_2_1
934	16SKpn_1_1
935	16SSa_3_1
936	16SRNAEf_1_1
937	16SShominis_1_1
938	16SShaemolyt_1_1
939	23SEfaecium_1_1
940	16SrRNAPrmi_1_1
941	16SrRNAPrvu1_1_1

(continued)

Positive controls / 16S	
942	16SSa_1_1
943	16SKlox_1_1
Positive controls / Spiked Controls	
944	p53_1_1
945	0135mihck_1_1
946	FAN_1_1
947	0270cap_1_1

[0059] The DNA microarray of (1) is preferably suitable for

(I) identification of *Staphylococcus aureus* and comprises one or more or all gene probes of group (a) selected from SEQ ID NO:1-99, preferably at least the gene probes represented by SEQ ID NO:71 and 68; and/or

(II) identification of *Escherichia coli* and comprises one or more or all gene probes of group (a) selected from SEQ ID NO:142-152, preferably at least the gene probes represented by SEQ ID NO: 143 and 149; and/or

(III) identification of *Staphylococcus epidermidis* and comprises gene probes of group (a) selected from SEQ ID NO:174-199, preferably at least the gene probes represented by SEQ ID NO: 177 and 184; and/or

(IV) identification of *Staphylococcus haemolyticus* and comprises one or more or all gene probes of group (a) selected from SEQ ID NO:209-214, preferably at least the gene probes represented by SEQ ID NO:209 and 210; and/or

(V) identification of *Staphylococcus lugdunensis* and comprises one or more or all gene probes of group (a) selected from SEQ ID NO:216-219, preferably at least the gene probes represented by SEQ ID NO:216 and 219; and/or

(VI) identification of *Staphylococcus warneri* and comprises one or more or all gene probes of group (a) selected from SEQ ID NO:224-229, preferably at least the gene probes represented by SEQ ID NO:224 and 225; and/or

(VII) identification of *Candida albicans* and comprises one or more or all gene probes of group (a) selected from SEQ ID NO:231-291, preferably at least the gene probes represented by SEQ ID NO:231 and 232; and/or

(VIII) identification of *Enterococcus faecalis* and comprises one or more or all gene probes of group (a) selected from SEQ ID NO:308-342, preferably at least the gene probes represented by SEQ ID NO:308 and 310; and/or

(IX) identification of *Enterococcus faecium* and comprises one or more or all gene probes of group (a) selected from SEQ ID NO:377-393, preferably at least the gene probes represented by SEQ ID NO:377 and 380; and/or

(X) identification of *Klebsiella pneumonia* and comprises one or more or all gene probes of group (a) selected from SEQ ID NO:399-431, preferably at least the gene probes represented by SEQ ID NO:399 and 402; and/or

(XI) identification of *Klebsiella oxytoca* and comprises one or more or all gene probes of group (a) selected from SEQ ID NO:449-469, preferably at least the gene probes represented by SEQ ID NO:449 and 455; and/or

(XII) identification of *Pseudomonas aeruginosa* and comprises one or more or all gene probes of group (a) selected from SEQ ID NO:470-490, preferably at least the gene probes represented by SEQ ID NO:470 and 471 ; and/or

(XIII) identification of *Streptococcus pneumoniae* and comprises one or more or all gene probes of group (a) selected from SEQ ID NO:523-591, preferably at least the gene probes represented by SEQ ID NO:523 and 524; and/or

(XIV) identification of *Streptococcus agalactiae* and comprises one or more or all gene probes of group (a) selected from SEQ ID NO:606-639, preferably at least the gene probes represented by SEQ ID NO:606 and 619; and/or

(XV) identification of *Streptococcus pyogenes* and comprises one or more or all gene probes of group (a) selected from SEQ ID NO:645-656, preferably at least the gene probes represented by SEQ ID NO:645 and 646; and/or

(XVI) identification of *Streptococcus viridans* and comprises one or more or all gene probes of group (a) selected from SEQ ID NO:687-701, preferably at least the gene probes represented by SEQ ID NO:687 and 691 ; and/or

(XVII) identification of *Proteus mirabilis* and comprises one or more or all gene probes of group (a) selected from SEQ ID NO:706-749, preferably at least the gene probes represented by SEQ ID NO:706 and 710; and/or

(XVIII) identification of *Proteus vulgaris* and comprises one or more or all gene probes of group (a) selected from SEQ ID NO:776-781, preferably at least the gene probes represented by SEQ ID NO:776 and 777.

[0060] In a further especially preferred aspect, the DNA microarray of (1) is suitable for

(I) virulence determination of *Staphylococcus aureus* and comprises one or more or all of the gene probes of group

(b) selected from SEQ ID NO:100-141 ; and/or

(II) virulence determination of *Escherichia coli* and comprises one or more or all of the gene probes of group (b) selected from SEQ ID NO: 153-173; and/or

(III) virulence determination of *Staphylococcus epidermidis* and comprises one or more or all of the gene probes of group (b) selected from SEQ ID NO:200-208; and/or

(IV) virulence determination of *Staphylococcus haemolyticus* and comprises the gene probe of group (b) represented by SEQ ID NO:215; and/or

(V) virulence determination of *Staphylococcus lugdunensis* and comprises one or more or all of the gene probes of group (b) selected from SEQ ID NO:220-221 ; and/or

(VI) virulence determination of *Staphylococcus warneri* and comprises the gene probe of group (b) represented by SEQ ID NO:230; and/or

(VII) virulence determination of *Candida albicans* and comprises one or more or all of the gene probes of group (b) selected from SEQ ID NO:292-307; and/or

(VIII) virulence determination of *Enterococcus faecalis* and comprises one or more or all of the gene probes of group (b) selected from SEQ ID NO:343-376; and/or

(IX) virulence determination of *Enterococcus faecium* and comprises one or more or all of the gene probes of group (b) selected from SEQ ID NO:394-398; and/or

(X) virulence determination of *Klebsiella pneumonia* and comprises one or more or all of the gene probes of group (b) selected from SEQ ID NO:432-448; and/or

(XI) virulence determination of *Klebsiella oxytoca*; and/or

(XII) virulence determination of *Pseudomonas aeruginosa* and comprises one or more or all of the gene probes of group (b) selected from SEQ ID NO:491-522; and/or

(XIII) virulence determination of *Streptococcus pneumoniae* and comprises one or more or all of the gene probes of group (b) selected from SEQ ID NO:592-605; and/or

(XIV) virulence determination of *Streptococcus agalactiae* and comprises one or more or all of the gene probes of group (b) selected from SEQ ID NO:640-644; and/or

(XV) virulence determination of *Streptococcus pyogenes* and comprises one or more or all of the gene probes of group (b) selected from SEQ ID NO:657-686; and/or

(XVI) virulence determination of *Streptococcus viridans* and comprises one or more or all of the gene probes of group (b) selected from SEQ ID NO:702-705; and/or

(XVII) virulence determination of *Proteus mirabilis* and comprises one or more or all of the gene probes of group (b) selected from SEQ ID NO:750-775; and/or

(XVIII) virulence determination of *Proteus vulgaris* and comprises one or more or all of the gene probes of group (b) selected from SEQ ID NO: 782-784.

[0061] In a further especially preferred aspect, the DNA microarray of (1) is suitable for antibiotic resistance determination of (I) *Staphylococcus aureus*, (II) *Escherichia coli*, (III) *Staphylococcus epidermidis*, (IV) *Staphylococcus haemolyticus*, (V) *Staphylococcus lugdunensis*, (VI) *Staphylococcus warneri*, (VIII) *Enterococcus faecalis*, (IX) *Enterococcus faecium*, (X) *Klebsiella pneumonia*, (XI) *Klebsiella oxytoca*, (XII) *Pseudomonas aeruginosa*, (XIII) *Streptococcus pneumoniae*, (XIV) *Streptococcus agalactiae*, (XV) *Streptococcus pyogenes*, (XVI) *Streptococcus viridans*, (XVII) *Proteus mirabilis*, and/or (XVIII) *Proteus vulgaris* and comprises one or more or all of the gene probes of group (c) selected from SEQ ID NO:785-909; and/or

[0062] it is suitable for antibiotic resistance determination of (VII) *Candida albicans* and comprises one or more or all of the gene probes of group (c) selected from SEQ ID NO:910-918.

[0063] In a preferred embodiment, the microarray of (1) is suitable for identification and characterisation, i.e. virulence and/or resistance determination, of the target microorganism and comprises one or more or all of the gene probes of group (a) and additionally one or more or all of the gene probes of group (b) and group (c) for each organism as listed above

[0064] If the identification and/or characterisation of *S. aureus*, *E. coli* and/or *P. aeruginosa* is the aim of a test using the array, then the array comprises preferably at least the core gene probes designated in example 7, more preferably all the sequences listed in Tab. 2 and/or Tab. 6. Even more preferred, it consists of said sequences.

[0065] In a most especially preferred aspect, the DNA microarray of (1) comprises the following gene probes, even more preferably consists of the following gene probes:

(I) When the DNA microarray is suitable for identification and characterisation of *Staphylococcus aureus*, it comprises

- (a) the gene probes represented by SEQ ID NO: 1-99; and
- (b) the gene probes represented by SEQ ID NO:100-141 and/or
- (c) the gene probes represented by SEQ ID NO:785-909.

(II) When the DNA microarray is suitable for identification and characterisation of *Escherichia coli*, it comprises

- (a) the gene probes represented by SEQ ID NO: 142-152; and
- (b) the gene probes represented by SEQ ID NO: 153-173 and/or
- (c) the gene probes represented by SEQ ID NO: 785-909.

(III) When the DNA microarray is suitable for identification and characterisation of *Staphylococcus epidermidis*, it comprises

- (a) the gene probes represented by SEQ ID NO: 174-199; and
- (b) the gene probes represented by SEQ ID NO: 200-208 and/or
- (c) the gene probes represented by SEQ ID NO: 785-909.

(IV) When the DNA microarray is suitable for identification and characterisation of *Staphylococcus haemolyticus*, it comprises

- (a) the gene probes represented by SEQ ID NO: 209-214; and
- (b) the gene probes represented by SEQ ID NO: 215 and/or
- (c) the gene probes represented by SEQ ID NO: 785-909.

(V) When the DNA microarray is suitable for identification and characterisation of *Staphylococcus lugdunensis*, it comprises

- (a) the gene probes represented by SEQ ID NO: 216-219; and
- (b) the gene probes represented by SEQ ID NO: 220-221 and/or
- (c) the gene probes represented by SEQ ID NO: 785-909.

(VI) When the DNA microarray is suitable for identification and characterisation of *Staphylococcus warneri*, it comprises

- (a) the gene probes represented by SEQ ID NO: 224-229; and
- (b) the gene probes represented by SEQ ID NO: 230 and/or
- (c) the gene probes represented by SEQ ID NO: 785-909.

(VII) When the DNA microarray is suitable for identification and characterisation of *Candida albicans*, it comprises

- (a) the gene probes represented by SEQ ID NO: 231 -291 ; and
- (b) the gene probes represented by SEQ ID NO: 292-307 and/or
- (c) the gene probes represented by SEQ ID NO: 910-918.

(VIII) When the DNA microarray is suitable for identification and characterisation of *Enterococcus faecalis*, it comprises

- (a) the gene probes represented by SEQ ID NO: 308-342; and
- (b) the gene probes represented by SEQ ID NO: 343-376 and/or
- (c) the gene probes represented by SEQ ID NO: 785-909.

(IX) When the DNA microarray is suitable for identification and characterisation of *Enterococcus faecium*, it comprises

- (a) the gene probes represented by SEQ ID NO: 377-393; and
- (b) the gene probes represented by SEQ ID NO: 394-398 and/or
- (c) the gene probes represented by SEQ ID NO: 785-909.

(X) When the DNA microarray is suitable for identification and characterisation of *Klebsiella pneumonia*, it comprises

- (a) the gene probes represented by SEQ ID NO: 399-431; and
- (b) the gene probes represented by SEQ ID NO: 432-448 and/or
- (c) the gene probes represented by SEQ ID NO: 785-909.

(XI) When the DNA microarray is suitable for identification and characterisation of *Klebsiella oxytoca*, it comprises

- (a) the gene probes represented by SEQ I D NO: 449-469, and
- (c) the gene probes represented by SEQ I D NO: 785-909.

(XII) When the DNA microarray is suitable for identification and characterisation of *Pseudomonas aeruginosa*, it comprises

- (a) the gene probes represented by SEQ I D NO: 470-490; and
- (b) the gene probes represented by SEQ I D NO: 491 -522 and/or
- (c) the gene probes represented by SEQ I D NO: 785-909.

(XIII) When the DNA microarray is suitable for identification and characterisation of *Streptococcus pneumoniae*, it comprises

- (a) the gene probes represented by SEQ I D NO: 523-591 ; and
- (b) the gene probes represented by SEQ I D NO: 592-605 and/or
- (c) the gene probes represented by SEQ I D NO: 785-909.

(XIV) When the DNA microarray is suitable for identification and characterisation of *Streptococcus agalactiae*, it comprises

- (a) the gene probes represented by SEQ I D NO: 606-639; and
- (b) the gene probes represented by SEQ I D NO: 640-644 and/or
- (c) the gene probes represented by SEQ I D NO: 785-909.

(XV) When the DNA microarray is suitable for identification and characterisation of *Streptococcus pyogenes*, it comprises

- (a) the gene probes represented by SEQ I D NO: 645-656; and
- (b) the gene probes represented by SEQ ID NO: 657-686 and/or
- (c) the gene probes represented by SEQ I D NO: 785-909.

(XVI) When the DNA microarray is suitable for identification and characterisation of *Streptococcus viridans*, it comprises

- (a) the gene probes represented by SEQ I D NO: 687-701 ; and
- (b) the gene probes represented by SEQ I D NO: 702-705 and/or
- (c) the gene probes represented by SEQ I D NO: 785-909.

(XVII) When the DNA microarray is suitable for identification and characterisation of *Proteus mirabilis*, it comprises

- (a) the gene probes represented by SEQ I D NO: 706-749; and
- (b) the gene probes represented by SEQ I D NO: 750-775 and/or
- (c) the gene probes represented by SEQ I D NO: 785-909.

(XVIII) When the DNA microarray is suitable for identification and characterisation of *Proteus vulgaris*, it comprises

- (a) the gene probes represented by SEQ I D NO: 776-781 ; and
- (b) the gene probes represented by SEQ I D NO: 782-784 and/or
- (c) the gene probes represented by SEQ I D NO: 785-909.

[0066] The microarray of embodiment (1) can be fabricated using textbook methods for microarray production, including printing with fine-pointed pins onto the solid support, photolithography using pre-made masks or dynamic micromirror devices, ink-jet printing or electrochemistry on microelectrode arrays (Müller, H.-J., Röder, T., "Der Experimentator: Microarrays, Spektrum Akademischer Verlag, Heidelberg (2004)). Preferred fabrication methods are printing methods spotting the gene probes onto the solid surface of the microarray. The attachment of the spotted DNA to the surface is achieved by covalent or non-covalent binding, preferably by non-covalent binding, more preferably by electrostatic

interaction (ionic binding), most preferably by ionic binding of the DNA to amino groups present on the surface of the solid support. Any amino-functionalized microarray support can be used, but gamma aminopropyl silane (GAPS™) coated slides, especially UltraGAPS™ coated glass slides, are preferred in present invention.

[0067] The amount of DNA per spot printed onto the array is from 0.1 to 15.0 ng, preferably from 0.1 to 0.2 ng.

[0068] Thus, the present invention also pertains to a method for fabrication of a microarray of embodiment (1), which method comprises spotting the gene probes listed above to an appropriate solid support.

[0069] The sample or clinical specimen of embodiment (1) is preferably selected from the group consisting of whole blood, serum, urine, saliva, liquor, sputum, punktate, stool, pus, wound fluid and positive blood cultures, more preferably is whole blood or a positive blood culture, most preferably is a positive blood culture. If blood culture is used as DNA source, 0.5 ml positive blood culture is sufficient for identification and characterisation of the microorganisms and bacteria present without prior amplification of the target DNA.

[0070] Thus, the microarray of present application is

- (i) a robust diagnostic tool, detecting all tested bacterial reference strains and clinical isolates;
- (ii) sensitive enough to yield positive signals with e.g. only 20 ng of purified genomic *S. aureus* DNA or 2 µg of DNA extracted from blood culture which contains a high percentage of human DNA;
- (iii) highly specific, distinguishing e.g. *S. aureus* from distantly related gram-negative bacteria like *Escherichia coli* or *Pseudomonas aeruginosa* as well as from closely related CoNS;
- (iv) precise enough to identify virulence factors and antibiotic resistance determinant genes without previous amplification by PCR.

[0071] Moreover, the whole procedure can be accomplished the same day after blood cultures become positive (e.g. in the Bactec®). Rapid identification of the causative pathogen in fungemia, bacteremia and sepsis is crucial for several reasons:

- (i) appropriate antimicrobial therapy should be started as early as possible and unnecessary treatment avoided;
- (ii) the prognosis of the patients with sepsis may be improved; and
- (iii) expenditures on antimicrobials and prolonged hospitalisation can be reduced.

[0072] With the gene-segment based microarray of (1) there is an excellent correlation between genotypic detection of antibiotic resistance determinants and phenotypic typing using conventional susceptibility testing. In one aspect of the invention, the detection of the resistance genes *mecA*, *blaZ*, *ermA*, *ermC*, *msrSA*, *aadD* and *aacA-aphD* by microarray hybridisation allows for reliable prediction of oxacillin, penicillin, erythromycin, tobramycin and gentamicin resistance in a single assay.

[0073] By microarray hybridisation according to present invention it is furthermore possible to discriminate multi-resistant and multi-susceptible MRSA (strain MW2). Multi-susceptible MRSA have been shown to be susceptible to tobramycin and erythromycin (Polyzou, A. et al., J. Antimicrob. Chemother. 48:231-4 (2001); Pournaras, S. et al., J. Clin. Microbiol. 39:779-81 (2001)).

[0074] In a preferred aspect of the invention, simultaneous comprehensive resistance genotyping for oxacillin, macrolide and aminoglycoside resistance genes (preferably *mecA*, *aadD*, *aacA-aphD*, *ermA,B,C* and *msrSA*) by microarray hybridisation allows the rapid discrimination of multi-resistant or multi-susceptible strains and in consequence other therapeutic options with e.g. macrolides and may reduce reliance on vancomycin (Polyzou, A. et al., J. Antimicrob. Chemother. 48:231-4 (2001); Pournaras, S. et al., J. Clin. Microbiol. 39:779-81 (2001)).

[0075] One preferred aspect of embodiment (1) is a DNA microarray for the identification and characterisation of the three important bacteremia causing species *Staphylococcus aureus*, *Escherichia coli* and *Pseudomonas aeruginosa* in a sample, preferably in blood culture. The microarray allows simultaneous species identification and detection of important virulence and antibiotic resistance genes in a single assay. Preferably, this array consists of 2-20 species specific gene probes, 1-20 virulence gene probes and 1-20 resistance gene probes of at least 100 nt length, more preferably of 200-800 nt length. One especially preferred embodiment is an array comprising or consisting of the gene probes listed in Tab. 2. The probes may be amplified from recombinant plasmids or synthesized by any other method known in the art. These probes represent genes encoding house-keeping proteins, virulence factors and antibiotic resistance determinants. Evaluation with 42 clinical isolates, 3 reference strains and 13 positive blood cultures revealed that this DNA microarray is highly specific in identifying *S. aureus*, *E. coli* and *P. aeruginosa* strains and in discriminating them from closely related Gram-positive and Gram-negative bacterial strains also known to be etiological agents of bacteremia. In Example 6 and 7, this array was successful in identifying all tested 27 *E. coli*, *P. aeruginosa* and *S. aureus* strains and in discriminating them from 21 closely related Gram positive and Gram negative bacterial strains. There is a nearly perfect correlation between genotypic antibiotic resistance by hybridisation to the *S. aureus* resistance gene probes *mecA* (oxacillin/methicillin resistance), *aacA-aphD* (gentamicin resistance), *ermA* (erythromycin resistance)

and *blaZ* (penicillin resistance) and the *E. coli* resistance gene probes *blaTEM-106* (penicillin resistance) and *aacC2* (aminoglycoside resistance) and phenotypic antibiotic resistance determined by conventional susceptibility testing (Example 10).

[0076] One further preferred aspect of embodiment (1) of the invention is a DNA microarray for the identification and characterisation of *S. aureus* in a sample, preferably in blood culture. Evaluation with 10 clinical isolates, 6 reference strains and 10 positive blood cultures revealed that this DNA microarray is highly specific in identifying *S. aureus* and in discriminating them from closely related Gram-positive and Gram-negative bacterial strains also known to be etiological agents of bacteremia (Example 11).

[0077] The method of embodiment (3) comprises - after isolating the total DNA (including non-microbial DNA) from a sample - the steps of immediate labelling and microarray-based detection of this isolated DNA with or without, preferably without, further DNA amplification steps after the DNA isolation. It is one advantage of the method (3) that it can be performed without said further DNA amplification steps, i.e. the isolated DNA is labelled and applied to the microarray without prior amplification. The use of a single protocol for all microbial species comprising all steps of a microarray procedure including DNA preparation and DNA-chip hybridisation, is essential for testing blood cultures or other clinical specimens, where the bacterial diagnosis is usually uncertain. Preferably, a DNA preparation protocol employing sonication for simultaneous cell disruption and target DNA fragmentation is the method of choice to increase the sensitivity of the microarray, in particular towards low-copy number and/or plasmid encoded genes which may be underrepresented in the target DNA.

[0078] The method of embodiment (3) is preferably a method for diagnosis of bacteremia or sepsis. Furthermore, the sample or clinical specimen used in embodiment (3) is preferably blood or derived from blood, more preferably is a blood culture. Most preferably, the clinical specimen is a positive blood culture.

[0079] To obtain positive signals in the method of embodiment (3), 100 pg of purified genomic microbial DNA may be sufficient (lower detection limit), but preferably at least 1 ng of said DNA should be present in the sample. Usually, at least 10 ng, preferably at least 20 ng, more preferably at least 1 µg of purified genomic microbial DNA or at least 1 µg, preferably at least 2 µg of DNA extracted from blood culture are required. 500 µl of positive blood culture yield enough DNA for several hybridisations.

[0080] In the method of embodiment (3), the ratio of microbial DNA to total DNA isolated from said sample or clinical specimen is less than or equal to 100 %, preferably is from 1% to 99%, more preferably from 30 to 60%.

[0081] The labelling reaction of the method of embodiment (3) may be any DNA labelling reaction known in the art. However, chemical labelling reactions consisting of chemical attachment of a reporter molecule to the sample DNA and labelling by integration of labelled nucleotides into the sample DNA are preferred. Preferably the reporter molecules are fluorophores, more preferably are of the cyanine group of fluorophores. Most preferably, the DNA is labelled with Cy3, Cy5 and/or Alexa Fluor 647 and Alexa Fluor 546. The ratio of bases to dye molecules (BDR) is preferably less or equal to 60.

[0082] The detection of the reporter molecule in the method of embodiment (3) of the invention is preferably done by using a suitable detection system for the bound reporter molecule. This detection system is preferably based on visualization of the reporter molecule, more preferably on fluorescence detection. Furthermore, the detection is preferably done by a microarray scanner.

[0083] In the method of embodiment (3) of the invention, the DNA microarray can be substituted by any other solid support onto which DNA gene probes are attached in a way permitting hybridisation of the DNA in the sample and subsequent detection of the bound DNA. This includes the use of microtiter plates coated with one or several DNA gene probes per well, of glass surfaces (like, e.g., microscopic slides) with DNA spots, of filter paper disks, membranes, gold electrodes and beads (particles with a diameter of from 1 nm to several µm made of glass, plastic, metal etc.) coated with DNA, etc.

[0084] The kit of embodiment (4) of the invention may additionally comprise reagents for the labelling reactions of embodiment (3) and/or reagents necessary for the hybridisation step of the method of embodiment (3).

[0085] The present invention is described in more detail by reference to the following examples. It should be understood that these examples are for illustrative purpose only and are not to be construed as limiting the invention.

Examples

[0086] In the experimental examples described below, standard techniques of recombinant DNA technology were used that were described in various publications, e.g. Sambrook et al. (1989), Molecular Cloning: A Laboratory Manual, Cold Spring Harbor Laboratory, or Ausubel et al. (1987), Current Protocols in Molecular Biology 1987-1988, Wiley Interscience. Unless otherwise indicated, all enzymes and kits were used according to the manufacturers' specifications.

Example 1 : Materials and Methods

[0087] Reference strains, clinical isolates and culture conditions: Bacterial reference strains were obtained from the American Type Culture Collection (ATCC, Manassas, Va.), the Deutsche Sammlung von Mikroorganismen und Zellkulturen (DSMZ, Braunschweig, Germany) or the network on antimicrobial resistance in *Staphylococcus aureus* (NARSA, Herndon, Virginia). Clinical isolates were obtained from the inventors' clinical routine microbiology laboratory.

[0088] The following bacteria were used for evaluation of the specificity of the microarray in Examples 2-10: *Staphylococcus aureus* (ATCC 25923, NRS123 alias MW2, 5 clinical isolates), *Staphylococcus epidermidis* (5 clinical isolates), *Staphylococcus capitis* (clinical isolate), *Staphylococcus haemolyticus* (clinical isolate), *Staphylococcus hominis* (clinical isolate), *Staphylococcus warneri* (clinical isolate), *Staphylococcus auricularis* (clinical isolate), *Micrococcus* spp. (clinical isolate), *Escherichia coli* (ATCC 25922, 6 clinical isolates), *Pseudomonas aeruginosa* (ATCC27853, 5 clinical isolates), *Klebsiella pneumoniae* (3 clinical isolates), *Proteus mirabilis* (2 clinical isolates), *Serratia marcescens* (2 clinical isolates), *Enterobacter cloacae* (clinical isolate), *Enterobacter aerogenes* (clinical isolate), *Acinetobacter baumannii* (clinical isolate), *Stenotrophomonas maltophilia* (clinical isolate), *Enterococcus* spp. (clinical isolate), *Enterococcus faecalis* (clinical isolate) and *Streptococcus pneumoniae* (clinical isolate).

[0089] Bacterial strains and clinical isolates were grown over night at 37 °C with constant shaking in 5 ml Luria-Bertani (LB) broth or tryptic soy broth (TSB, 30 g/l, Merck) containing 3 g/l yeast extract. Enterococci and streptococci were grown in 10 ml TSB plus yeast without agitation under 5% CO₂. Overnight cultures were harvested at 2,560 g for 10 min. After discarding the supernatant the pellet was washed in 1 ml TE (10 mM Tris-HCl, pH 7.5 and 1 mM EDTA) and recovered by centrifugation at 17,900 g for 10 min. Cell pellets were used for DNA preparation.

[0090] Blood cultures: Aerobic and anaerobic blood culture bottles (BACTEC®, Becton Dickinson, Heidelberg, Germany) were inoculated with blood from patients with suspected sepsis and placed in a BACTEC® 9240 blood culture system (Becton Dickinson), a continuous-reading, automated, and computed blood culture system that detects the growth of microorganisms by monitoring CO₂ production. Incubation was performed according to the manufacturer's recommendations. Bottles with a positive growth index were removed from the incubator, and aliquots of 1 ml of the blood culture suspensions were taken aseptically with a needle syringe. 1 ml-aliquots of the blood culture suspensions were mixed with 1 ml 0.1% Triton®-X-100 and kept at room temperature for 5 min in order to disrupt human blood cells. Bacterial cells were then harvested at 17,900 g for 10 min, pellets were washed in 1 ml TE, recovered by centrifugation and used for DNA preparation. For conventional identification and susceptibility testing, a second 1 ml-aliquot was examined by Gram-stain and subcultured on agar plates. The organisms grown on agar plates were characterised and tested for susceptibility using a VITEK-2 system (bioMérieux, Inc., Nürtingen, Germany), Etest strips (AB BIODISK, Solna, Sweden) or disk diffusion tests following the method recommended by the National Committee for Clinical Laboratory Standards (NCCLS) (Standards, N.C.f.C.L., Approved standard M2-4a, Villanova, PA (1990)).

[0091] For microarray hybridisation experiments, DNA was prepared from 13 blood cultures positive for *S. aureus* (4), *S. epidermidis* (3), *S. pneumoniae* (2), *P. aeruginosa* (1), *E. coli* (2) and *P. mirabilis* (1).

Example 2: DNA preparation

[0092] Total cellular DNA was extracted and purified either by using the First-DNA All-tissue kit (GEN-IAL GmbH, Troisdorf, Germany) following the instructions of the supplier or by enzymatic lysis followed by phenol/chloroform extraction. For the latter protocol, cell pellets were resuspended in 500 µl lysis buffer (20 mM Tris-HCl, pH 8.0, 2 mM EDTA, pH 8.0, and 1.2% Triton®-X-100) and lysozyme (Sigma, Taufkirchen, Germany) was added to reach a final concentration of 0.8 mg/ml. In addition, lysostaphin (Sigma) was added to a final concentration of 0.2 mg/ml to promote staphylococcal lysis or mutanolysin (0.5 U/µl; Sigma) was added to lyse Streptococci and Enterococci. After incubation at 37°C for one hour, cell lysates were treated with Proteinase K (1 mg/ml; Sigma) for 1 hour at 55°C and then with RNase A (0.2 mg/ml; Qiagen, Hilden, Germany) for 1 hour at 37°C. The volume was increased by the addition of 200 µl TE and the salt concentration was adjusted to 0.7 M by addition of 5 M NaCl. A 10% CTAB (cetyltrimethylammonium bromide) solution in 0.7 M NaCl was added to a final concentration of 1% and incubated at 65°C for 20 min in order to release DNA from polysaccharide DNA complexes. DNA was then extracted once with phenol/chloroform/isoamyl alcohol (25:24:1) and once with chloroform/isoamyl alcohol (24:1) prior to precipitation with one volume of isopropanol. After centrifugation at 17,900 g for 30 min, DNA pellets were washed in 70% ethanol and resuspended in 50-100 µl TE.

[0093] Concentration, purity and size of the purified DNA preparations were determined by UV-spectrophotometry (lambda 40, PerkinElmer, Boston USA) and 1% agarose gel electrophoresis.

Example 3: DNA labelling

[0094] Total DNA from commercially available reference strains, clinical isolates and blood cultures was labelled by a non-enzymatic chemical labelling method using the Label It Cy3/Cy5 kits (Mirus, Madison, USA) or the ULYSIS Alexa

Fluor 467 Nucleic Acid Labelling Kit (Molecular Probes; Eugene, USA). Prior to labelling, each target DNA was spiked with three gene segments (1 µl each, 30 ng/µl) amplified by PCR from selected recombinant plasmids to serve as internal positive controls.

[0095] For labelling with the Label It Cy3/Cy5 kit 5 µg of high molecular weight DNA (>20 kb) were mixed with 7.5 µl reagent in a total volume of 50 µl and incubated for 2 hours at 37°C according to the recommendations by the supplier. After adjusting the volume to 200 µl with H₂O and adding 0.1 volume of 5 M NaCl, unbound label was removed by precipitation with 2 volumes of ice-cold absolute ethanol for at least 30 min at -20 °C. The labelled DNA was recovered by centrifugation at 17,900 g for 30 min. The pellet was washed with 70% ethanol and resuspended in 70 µl TE.

[0096] For labelling with the Ulysis Alexa Fluor 647 kit, 1 µg DNA was denatured at 95°C for 5 min, cooled on ice, mixed with 20 µl labelling buffer and 5 µl reagent and incubated at 80 °C for 15 min according to the instructions of the manufacturer. Unbound dye was removed by ethanol precipitation as described above. The relative labelling efficiency of a reaction was evaluated by calculating the approximate ratio of bases to dye molecules (acceptable labelling ratios for nucleic acid were =60). This ratio and the amount of recovered labelled DNA was determined by measuring the absorbance of the nucleic acids at 260 nm and the absorbance of the dye at its absorbance maximum using a lambda40 UV-spectrophotometer (PerkinElmer) and plastic disposable cuvettes for the range from 220 nm to 1,600 nm (UVette; Eppendorf, Hamburg, Germany).

Example 4: Microarray construction

[0097] Cloned PCR-products were used to generate probes for the DNA microarray. All together 120 gene segments representing virulence genes, antibiotic resistant determinants and species specific metabolic and structural genes from *S. aureus* (40), *E. coli* (31) and *P. aeruginosa* (49) were represented on the microarray (Tab. 2).

Tab. 2: Gene probes with SEQ ID NOs, function, gi numbers and primer sequences. *E. coli* gene probes (1-31), *P. aeruginosa* gene probes (32-80), *S. aureus* gene probes (81-120).

Array No.	Symbol	Function	gi number	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
1	<i>envZ</i>	Inner membrane osmosensor	453286	143	AGCCTGGTGACGA CTTATC [1233]	ATCCGCCAGTTGCTT AAC [1234]
2	<i>fes(2)</i>	Enterochelin esterase (siderophore)	145916	161	TGTTTCTGCACTCG AAATG [1269]	GGCAATAGCTTTCAC CAG [1270]
3	<i>fes(1)</i>	Enterochelin esterase (siderophore)	145916	160	TGTTTGAGGTCAC TTCTGG [1267]	CAATAGCTTTCACCA GGG [1268]
4	<i>nfrB</i>	Bacteriophage N4 receptor, inner membrane protein	16127994	145	ATGGAATTGCGTCT GTTC [1237]	AAGTTTAGCCACAGC AGG [1238]
5	<i>yacH</i>	Putative membrane protein	16127994	148	GACTCGGTACAGC GATTG [1242]	CTGACGTTGGGTATC TCG [1243]
6	<i>yagX</i>	Putative enzyme	16127994	149	CTTTACGACGGTTC TCCC [1244]	AATCTCCCTGCTGA AATG [1245]
7	<i>ycdS</i>	Putative outer membrane protein	16127994	150	TTGAAACTTCTTAC TGCCG [1246]	AATTTCTAATGCAGC GTATTG [1247]
8	<i>b1169</i>		16127994	142	GTTTGGGACTTATT GCTCTG [1230]	CATCAGCCACAGTTT CAAG [1231]
9	<i>b1202</i>	Putative outer membrane protein	16127994	153	GAATACCAAGCA GATCGTC [1252]	CCGAGATCGACAACA GAG [1253]
10	<i>fliCb</i>	Flagellar H antigen	8071787	144	ACCACGACAGGTC TTTATG [1234]	AGAGAGGCACCGTC ACTAC [1235]

(continued)

Array No.	Symbol	Function	gi number	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
11	<i>iucA</i>	Aerobactin synthesis (siderophore)	474189	165	CATCAGGCAGTTAT CCTGTC [1276]	AGTCGTCCTCCTGCA TTAC [1277]
12	<i>iucB</i>	Aerobactin synthesis (siderophore)	474189	166	TTCACAGCGGATAT GGAC [1278]	CACTTTGCTCCCAGA AATAC [1279]
13	<i>iucC</i>	Aerobactin synthesis (siderophore)	474189	167	AGACTGGGATTTG GTCAAC [1280]	AGACACCATCCTGCC TTC [1281]
14	<i>papG</i>	Adhesin, P-pil protein	42307	168	GGAGTATATTGCGT GGGTAG [1282]	AAGATTACCATAGA GGCG [1283]
15	<i>yciQ</i>	Putative membrane protein	16127994	151	ATAGCAGGGCTGT TTGTATC [1248]	GACACGGAAACCAA ATTAAC [1249]
16	<i>ymcA</i>	Hypothetical protein	16127994	152	TATTGTCATCGCGC AGAG [1250]	TGTTGGTTGAAAAGA GTAGC [1251]
17	<i>eae</i>	Genetic locus necessary for the production of attaching and effacing lesions on tissue culture, OM protein adhesin	145852	154	CTAACTCATTGTGG TGGAGC [1254]	CTTGTCATCGGTGAT GTTG [1255]
18	<i>eltB</i>	Enterotoxin subunit B	145830	155	GGCGTTACTATCCT CTCTATG [1256]	TTTCCATACTGATTG CCG [1257]
19	<i>escR</i>	Secretion	2897961	156	TTTGTTGTTATTGG TACTTCATTC [1258]	ATCGAAATTGTTACT GGCG [1259]

(continued)

Array No.	Symbol	Function	gi number	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
20	<i>escT</i>	Secretion	2897961	157	TTACGCTTCCGATC ATAGTAG [1260]	GAATACGTTTAGTTG AGCG [1261]
21	<i>escU</i>	Secretion	2897961	158	AAGTGAAGAGGTA ATGGCTG [1262]	TACCATCAGTATCCT TGGC [1263]
22	<i>espB</i>	Protein secreted by enteropathogenic E. coli	1657262	159	GATGGTGACTCTAT TGCAGG [1264]	CCATACGATTCTGGA CCTC [1265]
23	<i>hlyA</i>	Enterohemorrhagic Escherichia coli hemolysin	525328	163	CTTGGAATGTTGG TAAAGC [1272]	TAAATCCTTCGGTT GAGC [1273]
24	<i>hlyB</i>	Enterohemorrhagic Escherichia coli hemolysin	1247757	164	TCAATGCTGAAACT ATAAGGC [1274]	ACTTAGCACCCAGTT CGAC [1275]
25	<i>SLTII</i>	Shiga-like toxin type II	304950	171	TTCTTCGGTATCCT ATTCCC [1288]	TGTGAGGTCCACTTC TTCC [1289]
26	<i>toxA-LTPA</i>	Subunit A of heat-labile enterotoxin	148027	172	AAATGGCGACAAAT TATACC [1290]	CTGGGTCTCCTCATT ACAAAG [1291]
27	<i>VT2va B</i>	Verotoxin-2 variant, beta- subunit, shiga-like toxin	148261	173	AAGAAGATGTTTAT GGCGG [1292]	GATTCACAGGTACTG GATTG [1293]
28	<i>aacC2</i>	aminoglycoside-(3)-N- acetyltransferase	45769	833	GACCGATCACCCCTA CGAG [2612]	CGAAATGCTTCTCAA GATAGG [2613]
29	<i>blaTE M-106</i>	Class A beta-lactamase	21464484	815	ACATCGAACTGGAT CTCAAC [2576]	TCTCAGCGATCTGTC TATTC [2577]

(continued)

Array No.	Symbol	Function	gi number	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
30	<i>strB</i>	Streptomycin resistance protein B	17129524	834	AAGTTTCATTGCCA GACG [2614]	TAGACTGCGTTGCTC CTC [2615]
31	<i>sul</i>	Dihydropteroate synthase, sulfonamide resistance	17129524	887	CATCGTCAACATAA CCTCG [2720]	AATTCTTGGGGTTTC TTTC [2721]
32	<i>algB</i>	Alginate biosynthesis (exopolysaccharide)	150990	494	CACTTTCCGTTATT GCCTC [1934]	GAGGATGAGGATGT TGGC [1935]
33	<i>algN</i>	Alginate biosynthesis (exopolysaccharide)	150999	495	GACTGGCTGAATC GTCTC [1936]	GCAGGTCGTACCAG GAAG [1937]
34	<i>algR</i>	Alginate biosynthesis (exopolysaccharide)	151003	496	ATTGTCGATGACGA ACCTC [1938]	TTCAGGTAGAGCTG GAAATG [1939]
35	<i>aprA</i>	Alkaline protease	45279	491	CATTGAAAGGTCGT AGCG [1928]	CGACGAAGTGGATA TTGG [1929]
36	<i>aprE</i>	Alkaline protease secretion	45279	492	GGTCAAGCACATC CTAGTG [1930]	ACTTCCTTGCGGTAC TCC [1931]
37	<i>glpR</i>	Repression of glycerol metabolic enzymes (glp-glycerol-3-phosphate)	1399486	470	CAAGCACAAACAAG AAATACG [1886]	TAGACCTCCGAAGA GTTGC [1887]
38	<i>lasR_{la}</i>	Elastase, virulence protein	309873	499	CTGGGACGTTAGT GTCATC [1944]	GTCTTGGCATTGAGT TCG [1945]
39	<i>lasR_{lb}</i>	Transcriptional activator of elastase	151325	471	GAGCGACCTTGA TTCTC [1888]	ATAAGACCCAAATTA ACGC [1889]

(continued)

Array No.	Symbol	Function	gi number	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
40	<i>lipA</i>	Extracellular triacylglycerol lipase	45340	500	AAGAAGTCTCTGCT CCCC [1946]	ACGATTTCTCTCCACC TGT [1947]
41	<i>lipH</i>	Lipophilic protein necessary for the expression of active lipase	483463	501	ATGGCAGTTTCAGT GTCTG [1948]	CGAAATAGTCGTCCA GCC [1949]
42	<i>mexA</i>	Multidrug resistance protein MexA precursor	5616092	889	CTCGACCCGATCTA CGTC [2724]	GTC TTCACCTCGACA CCC [2725]
43	<i>Ori25 2</i>	DnaJ-like protein	4545242	503	GACCTGCTGTCCA GTTG [1952]	AATTCACGGGTTTTTC TCG [1953]
44	<i>OriX</i>	Regulatory protein, glycerol metabolism	1399486	472	ATGGATGCTCGGG TACTG [1890]	CTCAGCTACAGCCAC GAC [1891]
45	<i>pa026 0</i>	Hypothetical protein	15595198	473	GATCGTCTCTGCCC AGTC [1892]	ACATTGATGGTGTGCG TCC [1893]
46	<i>pa057 2</i>	Hypothetical protein	15595198	474	AGGAGAGAACATG AGTCGC [1894]	TCCTTGTCCTCCAGTAG TTACC [1895]
47	<i>pa104 6</i>	Hypothetical protein	15595198	477	AGGCATCCATCGA GCTAC [1900]	AACGTCCGAGCAGG ATAC [1901]
48	<i>pa106 9</i>	Hypothetical protein	15595198	478	GCGAGGAGGTATT CGACA [1902]	CCCTTCTCGGAGTAG TGTT [1903]
49	<i>pa184 6</i>	Hypothetical protein	15595198	479	AAGGACTTCTGGTC GGTG [1904]	CAGGAACAGGTGCT CGTAG [1905]
50	<i>pa408 2</i>	Hypothetical protein	15595198	481	CGAGCACCAATATC GAAC [1908]	GAGCCGTAGGTGTT ATCG [1909]

(continued)

Array No.	Symbol	Function	gi number	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
51	<i>pchG</i>	Necessary for formation of siderophore pyochelin	4325021	504	CCTGCTCAACACCT TCTATC [1954]	GTCGAACAACGCGA ACAG [1955]
52	<i>PhzA</i>	Phenazine biosynthesis proteins (low molecular weight toxins)	5616088	505	GTTGAAAGGGTTTA CCGAC [1956]	AATTTCTGCATCGGG TTC [1957]
53	<i>PLC</i>	Phospholipase C (heat labile-hemolysin)	151492	507	GACTTCGCTGTTTG ACTTC [1960]	TCGGTTCGAGTTCAT AGC [1961]
54	<i>plcN</i>	Non-hemolytic phospholipase C	151497	508	GTGTTCCAGGTGTT CGAC [1962]	GATAGACGTTGTCTT TGACC [1963]
55	<i>plcR</i>	Phospholipase C regulation	151499	509	ACAACTGGAACA GCAACT [1964]	CGACTCTTGGCGGTA TTC [1965]
56	<i>PstP</i>	Phosphoenolpyruvate-protein phosphotransferase	4545246	485	GAAGTGAACTCGG CCAAAG [1916]	TCGAGCATCATCAGG TAGAC [1917]
57	<i>purK</i>	AIIR carboxylase II, purine biosynthesis	1621599	486	TCGAGAAGTCGAT GTTCAAG [1918]	CTTGCCGTTAGTGATG CAG [1919]
58	<i>rhlA</i>	Rhamnosyl-transferase involved in rhamnolipid biosynthesis	452502	518	AGTCTGTTGGTATC GGTTTG [1982]	CTCCAGGTCGAGGA AATG [1983]
59	<i>rhlR</i>	Rhamnolipid regulation	1117916	520	TTCGATTACTACGC CTATGG [1986]	GGTCCATTGCAGGAT CTC [1987]
60	<i>toxA</i>	Exotoxin A precursor	15595198	522	GTGCGCTACAGCT ACACG [1990]	CTTGCCCTCCCAGGT ATC [1991]
61	<i>uvrDII</i>	DNA helicase	3249556	487	AGACCTACAACAAG GTTTCG [1920]	TGAGGATAGTCCCTT CGC [1921]

(continued)

Array No.	Symbol	Function	gi number	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
62	<i>vsmI</i>	Autoinducer synthesis protein	695153	488	ATTCCTCTCTGAAT CGCTG [1922]	AATATCTTCATCGCC AGTTG [1923]
63	<i>xcpX</i>	Secretion protein, translocation of exoproteins across outer membrane	45433	490	TTCAACCTCAACGG ACTG [1926]	TGCAAGGTACTCACC AGC [1927]
64	<i>ExoS</i>	Exoenzyme S, secreted toxin	13892017	497	CGTTTGGGACAGA TTGAG [1940]	GATACTCTGCTGACC TCGC [1941]
65	<i>fvpA</i>	Ferripyoverdine receptor	1633044	498	AATGCGATAACCAT CAGC [1942]	CCGTCGTACTGGAA GTTG [1943]
66	<i>pa0625</i>	Hypothetical protein	15595198	475	AGGAGCAACTGAA GCGAC [1896]	TCTGCCTTTACCCAG GAC [1897]
67	<i>pa0636</i>	Hypothetical protein	15595198	476	AAGGTTGGCAGGA TCAAC [1898]	CTAGTGGCGAAAATTG AACAG [1899]
68	<i>pa3866</i>	Hypothetical protein	15595198	480	TTCCCTAACGAATG CTGTC [1906]	CGTTGCTCCCTCATA CAC [1907]
69	<i>PhzB</i>	Phenazine biosynthesis proteins (low molecular weight toxins)	5616088	506	ATGCTCGATAATGC TATTCC [1958]	TTCTCGTAGTAACCC TCGG [1959]
70	<i>pilAp</i>	Type IV pilin, involved in twitching motility and attachment	18535593	482	GCTTTACCTTGATC GAACTG [1910]	TCAATAGAGCCAGTC ACACC [1911]
71	<i>PilAp2</i>	type IV pilin, involved in twitching motility and attachment	21629637	483	TGCCGTGAGTGAA ATCAG [1912]	CGTAGTTGGCTTTCC AGTT [1913]

(continued)

Array No.	Symbol	Function	gi number	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
72	<i>pilC</i>	Pilin biogenesis protein	18535591	484	GGTATCAACCCACT AAAGGTC [1914]	GTCCAGAGCCTTCTAC CAGAG [1915]
73	<i>pvdD</i>	Pyoverdine synthetase D (siderophore)	1633044	510	GTCAAGGGTGTTG TCTGC [1966]	CTCTGCACAAACTCA GGG [1967]
74	<i>pyocin S1</i>	PyocinS1, bacteriocin	286179	512	CTTCAGTTCGAGA TGCC [1970]	GTAACGAACGCTATC GGG [1971]
75	<i>pyocin S1im</i>	Immunity protein of pyocin S1	286179	513	ATATACGGAAAAAG AGTTTCTTGAG [1972]	AGCACGCCATTCTTT AACTTC [1973]
76	<i>pyocin S2</i>	PyocinS2	286182	514	TATACGGCTTCAGA CTTTCC [1974]	TGGCATAAGTATTGG CAG [1975]
77	<i>pys2(1)</i>	PyocinS2	15595198	515	TCGCCAATAAGAAAG AAATTG [1976]	AGTGGTACTCGAAG GGTTCT [1977]
78	<i>pys2(2)</i>	PyocinS2	15595198	516	ATCCAGTATATTCC TGCTCG [1978]	TGCAATTTCTTCTTAT TGGC [1979]
79	<i>rfb303</i>	B-band LPS (O-antigen) biosynthesis	836903	517	ATCGTTCTGGTCTT CCTTG [1980]	ACCAAAGAGTGTTGA TAGCC [1981]
80	<i>rhlB</i>	Rhamnosyl- transferase involved in rhamnolipid biosurfactant synthesis	452502	519	AACGCTTCTTCGAT CAGG [1984]	GATACTGTGCGGTTG TGA [1985]
81	<i>femA</i>	Factor essential for methicillin resistance	4929298	801	TACAGTCATTTCAC GCAAAAC [2548]	TCACGCTCTTCATTT AGTTCT [2549]

(continued)

Array No.	Symbol	Function	gi number	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
82	<i>fmhA</i>	Factor essential for methicillin resistance	4574232	825	TGACTTCGGATGA GTTCAAT [2596]	GCTGTAAATTGTTGT TGCTTT [2597]
83	<i>fmhB</i>	Factor essential for methicillin resistance, putative	4574234	818	CTCACCCAAATGGA GATTTA [2582]	CTTGCTTTTCAGATG TTTCC [2583]
84	<i>gyrA</i>	DNA gyrase subunit A	296393	60	AGGCTCGTATGATT GAAAA [1066]	GGTTTTGAGCACGAT ATGTAG [1067]
85	<i>gyrB</i>	DNA gyrase subunit B	296393	61	TTGGCACAACTGAT AAGACA [1068]	AAAAATCGTTCAAAG TGCTC [1069]
86	<i>hemB</i>	Porphobilinogene synthase	2589180	62	ATCATCAGCGACAA TGAGAG [1070]	TTTTAAACATCTCGA ACTATATCTAA [1071]
87	<i>hemN</i>	Oxygen-independent coproporphyrinogen oxidase	14349226	65	TCTTCCATTCTCTC AGTCAAA [1076]	AGACCATGTATGTAG GTGGC [1077]
88	<i>hla</i>	α -Hemolysin	46763	120	GTCAGCTCAGTAAC AACAAACAC [1186]	GTAGCGAAGTCTGG TGAAAA [1187]
89	<i>lip</i>	Lipase	393265	68	TGCATCTTCCATTT TAATAGC [1082]	GTCATTGTCCTTTGT TGGTT [1083]
90	<i>menC</i>	o-Succinyl-benzoic acid synthetase	1255258	69	TTGACAGCTTTGCA TTTTTA [1084]	GGCTTTGTTGCTTTT AATGA [1085]
91	NAG	N-acetyl-glucosaminidase	2506026	125	AAGTTGCTCAAATA CAAGCTG [1196]	TGATGTTAGCCCAAT CTACA [1197]

(continued)

Array No.	Symbol	Function	gi number	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
92	<i>norA2 3</i>	Quinolone resistance protein	4115706	904	GGTACTTGTTGCT GCTTTT [2754]	CGTAATCGCAATCGA AATA [2755]
93	<i>nuc</i>	Nuclease	46623	71	TGGCTATCAGTAAT GTTTCG [1088]	GAATCAGCGTTGTCT TCG [1089]
94	<i>rpoB</i>	RNA polymerase B- subunit	677848	73	TGGAAGACATCGT AAACGTA [1092]	TGGATCAAAGAAACG TGAAT [1093]
95	<i>tag</i>	DNA- 3-methyladenine glycosidase	6434027	81	TTTTGATTTATCTTC TGACGG [1108]	CATTCAATTTATTCCC ACCT [1109]
96	<i>16SSa</i>	16S rRNA	46498	942	TCTCTGATGTTAGC GGCGG [2830]	TCAGGCTTTTCGCCCA TT [2831]
97	<i>clfB</i>	Clumping factor B	3393010	4	TAGCATAGCAACAA ACAGTGA [954]	GTTTTGACCTGAAGC TGTATC [955]
98	<i>EDIN</i>	Epidermal cell differentiation inhibitor	152997	113	AAAGATAGTTCTAA GATAAATGGTC [1172]	GGCCATTATTGGTCT GTTG [1173]
99	<i>elkT-abcA</i>	Lantibiotic epilancin K7 translocator	1841513	896	ATTAGAAATTGGGA CTGGTG [2738]	AGCGTGTCAATATCCT TCATC [2739]
100	<i>epiP-bsaP</i>	Biosynthesis of lantibiotic epidermin; serine protease	21204850	58	CTTAGATGTCCCAT GCTGAT [1062]	GTCAAACGAGTGCTA ATGGT [1063]
101	<i>geh</i>	Lipase precursor; glycerol ester hydrolase	153019	59	TTCAATAGGCGTG GTGTC [1064]	TTATCTGTCGGTTTC TCTGG [1065]

(continued)

Array No.	Symbol	Function	gi number	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
102	<i>mreA</i>	ABC transporter	7548683	907	TACGATGACACCA GTCTTTG [2760]	ATCGACAAAACGTAC AGGAT [2761]
103	<i>murC</i>	UDP-N-acetylmuramoyl- L-alanine synthetase	2642658	70	GTATTATTGCTGG GGTGAT [1086]	GGATATTTCTTTTCGT GCTGT [1087]
104	<i>sak</i>	Staphylokinase	47425	126	TGTTATTATTCTCA TTTTCTTCAAT [1198]	ATGCTCTGATAAATC TGGGA [1199]
105	<i>sea</i>	Enterotoxin A	153120	127	TTTTATTGCTGCC CTAACG [1200]	TTTTACAGAGTTAATC GTTTTATTATC [1201]
106	<i>sec1</i>	Enterotoxin C	46566	129	AATTTTGGCACAT GATTTA [1204]	CTTTATGTCTAGTT CTTGAGCTG [1205]
107	<i>eitb</i>	Exfoliative toxin B precursor	15301	115	TTTTAGCAGCGTCA ATTTT [1176]	CTGATCCAGAGTTTC CTACCT [1177]
108	<i>seb</i>	Enterotoxin B	152999	128	CGTAGATGTGTTTG GAGCTA [1202]	CTTGAGCAGTCACCT TTTTC [1203]
109	<i>ssfC</i>	Iron transport protein	3724154	80	TGATATTGGAAGAT ATTAGCATAGA [1106]	TGACAATCGCTTTAT TCATTT [1107]
110	<i>tst</i>	Toxic shock syndrome toxin	18266750	138	TTTTATCGTAAGC CCTTTG [1222]	CAATAACCACCCGTT TTATC [1223]
111	<i>aacA-aphD</i>	Bifunctional aminoglycoside modifying enzyme	3676412	843	AGATTTGCCAGAAC ATGAAT [2632]	TGTTGCATTTAGTCT TTCCA [2633]

(continued)

Array No.	Symbol	Function	gi number	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
112	<i>aadD</i>	Aminoglycoside acetyl transferase	21623792	837	GCTATTGGTGTTTA TGGCTC [2620]	CTGATTGCTTAACTG CTTCA [2621]
113	<i>aph-A3</i>	3'5'-aminoglycoside acetyl-transferase	1272325	840	GAGAAATACACCG GAATTGA [2626]	GCTCGACATACACTG CTTCC [2627]
114	<i>blaZ</i>	β -lactam ase	1575124	827	TGCTTTAGTTTTAA GTGCATGT [2600]	TCCTTCATTACACTC TTGGC [2601]
115	<i>cat</i>	Chloramphenicol acetyl-transferase	46651	862	AGAAAAATTGGGATA GAAAAGAA [2670]	CTGCAAGGCAACTG GTAT [2671]
116	<i>dhfrA</i>	S1 dihydrofolate reductase	3676404	859	CAATTACCTTGGCA CTTACC [2664]	CCCTTTTCTACGCAC TAAAT [2665]
117	<i>ermA</i>	rRNA methylase	13785452	852	CCAGAAAAACCCTA AAGACA [2650]	AAAGAACACGATATT CACGG [2651]
118	<i>ermC</i>	Adenine methylase	4138444	846	ACACAGTCAAAACT TTATTACTTCA [2638]	CAACAAGTTTATTTT CTGTAGTTT [2639]
119	<i>msrSA</i>	Macrolide antibiotic resistance	3892641	854	GACAGATTTTCGAT CCCTTA [2654]	CCTTTTTGTTTTGAT GCACT [2655]
120	<i>mecA</i>	Penicillin binding protein 2'	13785452	802	AGTTGTAGTTGTCG GGTTTG [2550]	TGAAGTCGCTTTTCC TAGAG [2551]

[0098] *S. aureus*, *E. coli* and *P. aeruginosa* genes were selected from the literature and databases, and compared by BLAST analysis to all other sequences available in the NCBI database. Primers were designed to amplify gene segments of 200-810 bp length and devoid of apparent homology with genes of other bacterial species and *Homo sapiens*. Gene segments were amplified by using the puReTaq Ready-To-Go PCR beads (Amersham Biosciences, Freiburg, Germany) and cloned into the pDrive Cloning Vector (Qiagen, Hilden, Germany) according to the recommendations of the suppliers and transformed into competent *Escherichia coli* (XL-1-Blue) cells using the calcium chloride protocol (Sambrook, J., Russel D.W., Molecular Cloning: A Laboratory Manual. Cold Spring Harbor Laboratory Press, NY (2001)).

[0099] For quality control purposes, all gene probes were partially sequenced and verified (with the BigDye kit 1.1 and an 377 DNA sequencer; Applied Biosystems, Foster City, USA). All sequences obtained were identical or substantially identical (>90% sequence identity) to those obtained from the database.

[0100] For DNA-probe production 120 recombinant plasmids containing *S. aureus*, *E. coli* and *P. aeruginosa* gene segments were used for re-amplification. Amplicons were purified and spotted in 4 replicates per slide on UltraGAPS™ Coated Slides (gamma amino propyl silane coated slides, Corning, NY, USA). Approximately 1 nL DNA (with a concentration of about 0.1 to about 0.2 ng/nL) per spot was spotted onto the slide with a Biorobotics Microgrid Microarrayer (Genomic Solutions, Ann Arbor, MI, USA).

Example 5: Hybridisation and scanning

[0101] All experiments described represent dual co-hybridisations of two different target DNA samples labelled respectively with Cy3, Cy5 or Alexa647. After removal of unbound label, Cy3 and Cy5/Alexa647 labelled DNAs were pooled and mixed with 10 µg of Salmon Sperm DNA and 50 µg of poly-A-DNA. The mixture was frozen in liquid nitrogen and lyophilised in the dark. Prior to hybridisation the target DNA was reconstituted in 33 µL H₂O and 55 µL 2x hybridisation solution (Memorec Biotec GmbH, Cologne, Germany) and chemically denatured with 11 µL denaturation buffer D1 (Mirus) and neutralized with 11 µL buffer N1 (Mirus) according the instructions of the supplier. Hybridisation was automatically performed with a TECAN Hybridisation Station (HS400, TECAN, Salzburg, Austria). The arrays were prewashed at 60 °C for 1 min with 0.2% SDS and 4x SSC and prehybridised in 120 µL denatured prehybridisation buffer (Memorec) for 30 min at 60 °C at mild agitation. After injection of 110 µL labelled DNA, hybridisation was performed at 60 °C for 18 hours at mild agitation. The arrays were washed at 50 °C in primary wash buffer (Memorec) - five cycles of 1 min wash time and 30 s soak time - and in secondary wash buffer (Memorec) - five cycles of 20 s wash time and 30 s soak time -, and finally dried at 30 °C with N₂ (2.7 bar) for 3 min. Hybridised arrays were scanned with a Scan Array 5000 laser scanner (PerkinElmer). Laser light of wavelengths at 532 and 635 nm was used to excite Cy3 dye and Cy5/Alexa647 dye, respectively. Fluorescent images were analysed by the ImaGene software (BioDiscovery, El Segundo, CA, USA).

Example 6: Specificity

[0102] In order to allow the simultaneous and rapid identification of *S. aureus*, *E. coli* and *P. aeruginosa* grown in blood culture specimens from septicemic patients, a microarray comprising a set of 40 *S. aureus*, 31 *E. coli* and 49 *P. aeruginosa* gene probes of 200 to 810 bp length was developed (Tab. 2).

[0103] The specificity of the DNA-chip was validated firstly (compare Example 1) with 45 well characterised clinical isolates and reference strains of the three target species as well as other related bacteria and secondly (compare Example 2) with 13 blood cultures from sepsis patients.

[0104] In all assays, three PCR-amplified DNA-segments, which had been added to each DNA preparation as a positive control, hybridised with the corresponding probes, indicating that labelling and hybridisation had performed efficiently.

[0105] Hybridisation experiments with *S. aureus*, *E. coli* and *P. aeruginosa* target DNAs, respectively, revealed specific hybridisation with the species-specific gene probes (Fig. 1). There was no cross-hybridisation between the three species with the exception of the *S. aureus* 16S rRNA gene probe (16SSa, Fig. 1 C), which hybridised also with *E. coli* and *P. aeruginosa* target DNA.

[0106] Identification of *E. coli*, *P. aeruginosa* and *S. aureus* reference strains, clinical isolates and blood cultures (BC) by microarray analysis corresponded by 100% with the conventional identification results (Fig. 1).

Example 7: Detection and discrimination

Example 7A: Detection and discrimination of *E. coli*

[0107] All DNA samples from 9 *E. coli* strains hybridised always with seven *E. coli* gene probes (*envZ*, *fes* (1) and (2), *nfrB*, *yacH*, *yagX*, *ycdS*) (Fig. 1 A, columns 19 to 27); in the following these genes are designated as core genes.

With 14 *E. coli* gene probes variable hybridisation was observed including the antibiotic resistance gene probes *bla-TEM106*, *sul*, *strB* and *aacC2*. Such a variable hybridisation profile is expected for antibiotic resistance genes since acquired resistance to antimicrobials is strain specific. For 11 *E. coli* virulence gene probes (*eae*, *eltB*, *escR*, *escT*, *escU*, *espB*, *hlyA*, *hlyB*, *SLTII*, *toxA-LTPA*, *VT2vaB*) no hybridisation signals were detected with any of the tested *E. coli* isolates and blood cultures. Since these virulence genes are known to be specific for particular *E. coli* pathotypes (Bekal, S. et al., J. Clin. Microbiol., 41:2113-25 (2003)), it was not surprising that they were not present in the tested strains. The *eae*, *esc* and *esp* genes for example are encoded on a chromosomal pathogenicity island, which is typical for enteropathogenic *E. coli* exhibiting the unique virulence mechanism known as attaching and effacing (AE) (Elliott, S.J. et al., Mol. Microbiol., 28:1-4 (1998)). The alpha-hemolysin (*hly*) operon is encoded on a large plasmid of enterohemorrhagic *E. coli* strains (Schmidt, H. et al., Infect. Immun. 63:1055-61 (1995)).

Example 7B: Detection and discrimination of *Pseudomonas aeruginosa*

[0108] DNA samples obtained from *P. aeruginosa* uniformly hybridised with 32 out of 49 *P. aeruginosa* specific gene segments including the *mexA* gene probe (core genes). Variable hybridisation was observed with 17 probes allowing for discrimination of individual *P. aeruginosa* isolates (Fig. 1 B, columns 12 to 18).

Example 7C: Detection and discrimination of *S. aureus*

[0109] Hybridisation experiments performed with 11 *S. aureus* target DNAs revealed signals in all assays with 16 *S. aureus* gene segments (core genes) (Fig. 1C, columns 1 to 11). Variable hybridisation was observed with 14 *S. aureus* gene probes including the 6 antibiotic resistance gene segments *aadD*, *aacA-aphD*, *blaZ*, *dfrA*, *ermA* and *mecA* and the virulence genes *sak*, *sea*, *sec1* and *EDIN*. The gene probes *geh*, *mreA*, *clfB* and *elkT-abcA* hybridised with 8, 10 (*mreA* and *clfB*) and 6 target DNAs respectively. However, PCR amplification of the four genes was positive for all 11 *S. aureus* target DNAs (not shown) suggesting that the four genes were present in all strains investigated and that these gene probes did not allow reliable detection of the four genes in *S. aureus*.

[0110] No hybridisation was observed with 10 probes including the toxin genes *seb*, *tst* and *etb*. In contrast to the community-acquired, multi-susceptible MRSA strain MW2 that hybridised to *mecA* and *blaZ* only, all six clinical MRSA strains showed the same multiresistant hybridisation pattern and their DNA hybridised to *ermA* (erythromycin resistance), *mecA* (oxacillin resistance) and the *aadD* gene (tobramycin resistance). As for the majority of multiresistant MRSA strains the *ermA* and *aadD* genes were shown to be located upstream and downstream, respectively, of the *mecA* gene in the *mec* chromosomal region (Chambers, H.F., Clin. Microbiol. Rev., 10:781-91 (1997); Polyzou, A. et al., J. Antimicrob. Chemother., 48:231-4 (2001)). Hybridisation to the core gene probes permitted the identification of *S. aureus*, while hybridisation to antibiotic resistance gene probes allowed for discrimination of strains.

Example 7D: Discrimination of *E. coli*, *P. aeruginosa* and *S. aureus* from related bacterial species

[0111] Co-hybridisation experiments performed with related bacterial species confirmed the high specificity of the DNA-chip (Fig. 1): For *S. epidermidis* and all other Coagulase-negative staphylococci, cross-hybridisation was observed only with the *S. aureus* 16S rRNA gene probe (16SSa, Fig. 1 C) and several common staphylococcal antibiotic resistance determinants (*aadD*, *aacA-aphD*, *aph-A3*, *blaZ*, *cat*, *dfrA*, *ermA*, *ermC*, *mdrSA*, *mecA*) (Fig. 1C, columns 28 to 36). There was no cross-hybridisation with other metabolic or virulence genes of *S. aureus*.

[0112] The *Micrococcus* spp. isolate showed no hybridisation with the DNA-chip (column 53). Streptococci (column 56 to 58) and enterococci (columns 54 and 55) showed hybridisation with the staphylococcal 16S RNA gene probe and once with the staphylococcal *aph-A3* aminoglycoside resistance gene probe (*Enterococcus* spp.) (Fig. 1C). Out of 12 strains of seven Gram-negative species (columns 41 to 52), two hybridised with the *S. aureus* 16S rRNA gene probe (*Klebsiella pneumoniae* and *Proteus mirabilis*, Fig. 1C, columns 41 and 47) and one clinical isolate of *Proteus mirabilis* hybridised with the *E. coli* resistance genes *bla-TEM106* (β -lactam resistance), *sul* (sulfonamide resistance) and *strB* (streptomycin resistance) (Fig. 1A, column 42). *Serratia*, *Stenotrophomonas*, *Acinetobacter* and *Enterobacter* species showed no cross-hybridisation with any gene probe.

Example 8: Sensitivity

[0113] While the majority of *P. aeruginosa* probes allowed unambiguous identification, some probes showed variable hybridisation patterns when microarray hybridisation was performed with different target DNA samples prepared from the same isolate (Tab. 3).

Tab. 3: Microarray hybridisation signals obtained with different target DNA preparations of *Pseudomonas aeruginosa* isolates.

	Isolate									
	C4242			C3853		C3045		C3755		
DNA amount [ng]	130 ^a	382 ^a	1350 ^b	510 ^a	> 2400 ^b	550 ^a	2950 ^b	1180 ^b	> 1600 ^b	
BDR ^c	22	75	48	29	30	90	41	139	40	
No. of hybridised gene probes ^d	38 (88%)	31 (72%)	43 (100%)	36 (88%)	41 (100%)	34 (89%)	38 (100%)	41 (95%)	43 (100%)	

^a Labelled with Alexa647

^b Labelled with Cy3 or Cy5

^c BDR: Base to dye ratio; number of nucleotides per one dye molecule

^d Number of signals obtained with *P. aeruginosa* capture probes (total 49) after hybridisation with different DNA preparations. The percentage of specific hybridisations is compared to the highest number of signals obtained for each isolate (100%).

[0114] Successful hybridisation with strong fluorescent signals depends on efficiency of DNA labelling (ratio of bases per one dye molecule) and amount of labelled DNA. For the different target DNA preparations of four clinical isolates, variable hybridisation was observed with 14 gene probes (*uvrDII*, *vsml*, *pa1069*, *rhIR*, *rhIA*, *rhIB*, *1046*, *pyocinS*, *pyocinS1im*, *plcR*, *plcN*, *PHZb*, *rbf303* and *pIIAp2*). For example, for three different DNA preparations of isolate C4242, hybridisation to *Pseudomonas*-gene probes varied from 31 to 43 probes, respectively, depending on the labelling efficiency and amount of DNA (Tab. 3). The lowest number of signals was detected with 382 ng target DNA, that, however, showed a high base to dye ratio of 75. Overall, the results suggest that varying amounts of DNA and base to dye ratios influenced the hybridisation results of few gene probes. However, irrespective of the varying quality and quantity of the labelled target DNA, 35 of the 49 *P. aeruginosa* gene probes showed robust hybridisation results in all performed experiments.

Example 9: Detection and characterisation of pathogens in blood cultures

[0115] Although DNA prepared from blood cultures comprises a mixture of human and bacterial DNA, the resulting hybridisation signals obtained with DNA from 1 ml positive blood culture allowed a clear and unambiguous characterisation of *S. aureus*, *E. coli* and *P. aeruginosa* present in 13 tested blood specimens (Fig. 1). In accordance to the VITEK2 characterisation, positive BACTEC® cultures were identified by microarray hybridisation as multi-resistant MRSA (Fig. 1C, column 8), penicillin-resistant *S. aureus* (column 9 and 11), multi-susceptible *S. aureus* (column 10), *E. coli* (Fig. 1A, columns 26 and 27), *P. aeruginosa* (Fig. 1B, column 18), and discriminated from oxacillin resistant *Staphylococcus epidermidis* (columns 33-35), *Proteus mirabilis* (column 43) and *Streptococcus pneumoniae* (columns 57 and 58).

Example 10: Correlation between susceptibility testing and microarray hybridisation of selected antibiotic resistance genes

[0116] *S. aureus*: For 11 *Staphylococcus aureus* strains and blood cultures, susceptibility results determined by the VITEK2 system, Etest strips and disk diffusion tests were compared with the results of the microarray hybridisation assay for the simultaneous detection of antibiotic resistance genes (Tab. 4). The presence or absence of resistance genes as indicated by microarray hybridisation was confirmed by PCR with gene specific primers (results not shown).

Tab. 4: Correlation between phenotypic and genotypic antibiotic resistance for 11 *S. aureus* isolates and blood cultures.

a) Penicillin resistance ^a	Hybridisation with <i>mecA/blaZ</i>	
	No. pos.	No. neg.
10 (resistant)	10	0
1 (susceptible)	0	1

(continued)

5	b) Oxacillin resistance	Hybridisation	with <i>mecA</i>
		No. pos.	No. neg.
	7 (resistant)	7	0
	4 (susceptible)	0	4
10	c) Erythromycin resistance	Hybridisation with <i>ermA</i> , <i>ermC</i> or <i>msrA</i>	
		No. pos.	No. neg.
	6 (resistant)	6	0
	5 (susceptible)	0	5
15	d) Tobramycin resistance	Hybridisation with <i>aadD</i>	
		No. pos.	No. neg.
	5 (resistant)	5	0
	6 (susceptible)	0	6
20	e) Gentamicin resistance	Hybridisation with <i>aacA-aphD</i>	
		No. pos.	No. neg.
	0 (resistant)	0	0
	11 (susceptible)	0	11
25	f) Trimethoprim resistance	Hybridisation with <i>dfrA</i>	
		No. pos.	No. neg.
	1 (resistant)	0	1 ^b
	10 (susceptible)	0	10
^a Number of strains tested for resistance			
^b <i>dfrA</i> gene detected by PCR			

[0117] For the *S. aureus* strains there was a 100% correlation between phenotypic resistance to penicillin and hybridisation to the *mecA* and/or *blaZ* gene (both genes confer resistance to penicillin, Tab. 4a). Phenotypic resistance to oxacillin correlated 100% with the hybridisation of the *mecA* gene (Table 4b), between resistance to erythromycin and hybridisation to the erythromycin resistance genes *ermA*, *ermC* or *msrA* (Tab. 4c) and between resistance to tobramycin and hybridisation to the *aadD* gene (Tab. 4d). Furthermore, they all showed 100% correlation between phenotypic susceptibility to gentamicin and no hybridisation to the resistance genes *aacA-aphD* (Tab. 4e). Notably the *dfrA* gene of the trimethoprim resistant strain MW2 (MIC of 1 µg/ml) was not detected by microarray hybridisation (Tab. 4f), whereas PCR amplification revealed the presence of the *dfrA* gene.

[0118] *E. coli* and other Gram negative bacteria: The prototype microarray harboured only four *E. coli* and one *P. aeruginosa* resistance gene probes which do not yet allow a comprehensive prediction of antibiotic resistances. Nevertheless, hybridisation with the *E. coli* resistance gene probe *blaTEM106* was observed in one *P. mirabilis* and four *E. coli* strains and correlated with phenotypic ampicillin resistance for all five strains (Tab. 5).

Tab. 5: Correlation between ampicillin/penicillin resistance, gentamicin/tobramycin resistance and streptomycin resistance and hybridisation with the resistance gene probes *blaTEM-106*, *aacC2*, *aph-A3* and *strB*, respectively.

Species	Resistance phenotype ^a	Hybridisation with			
		<i>blaTEM-106</i> ^b	<i>aacC2</i> ^b	<i>aph-A3</i> ^c	<i>strB</i> ^d
<i>E. coli</i> ATCC 25922	susceptible	-	-	-	-
<i>E. coli</i> C4821	AMP, STR	+	-	-	+
<i>E. coli</i> F3437	AMP	+	-	-	-
<i>E. coli</i> C3941	AMP, STR	+	-	-	+
<i>E. coli</i> F1806 ^d	AMP, GEN, TOB, STR	+	+	+	+
<i>E. coli</i> C4547	AMPi	-	-	-	-
<i>E. coli</i> C4230	AMP	-	-	-	-

(continued)

Species	Resistance phenotype ^a	Hybridisation with			
		<i>bla</i> TEM-106 ^b	<i>aacC2</i> ^b	<i>aph-A3</i> ^c	<i>strB</i> ^d
5 <i>E. coli</i> C3940	susceptible	-	-	-	-
<i>E. coli</i> F1642 ^d	STR	-	-	-	+
<i>P. mirabilis</i> C4024	AMP, STR	+	-	-	+
10 <i>P. mirabilis</i> C4403	susceptible	-	-	-	-
<i>P. mirabilis</i> F1738	susceptible	-	-	-	-
^a AMP, ampicillin; GEN, gentamicin; STR, streptomycin; TOB, tobramycin; i, intermediate					
^b <i>E. coli</i> gene probes					
^c <i>S. aureus</i> gene probes					
^d Positive blood culture					

[0119] One *E. coli* blood culture showed also resistance to tobramycin and gentamicin. This phenotypic resistance correlated with the hybridisation of the *aacC2* gene probe for aminoglycoside resistance and the *S. aureus aph-A3* probe for tobramycin/kanamycin resistance (Tab. 5). For one *P. mirabilis* and four *E. coli* strains, phenotypic resistance to streptomycin correlated with hybridisation to the *strB* probe (Tab. 5).

[0120] All *P. aeruginosa* strains hybridised with the *mexA* gene probe (Fig. 1) and showed phenotypic resistance to tetracycline, trimethoprim/sulfamethoxazole, penicillins (ampicillin, mezlocillin) and cephalosporines (cefazolin, cefixime, cefuroxime). The *mexA-mexB-oprM* operon is a determinant for a three component efflux system responsible for intrinsic and acquired multiresistance in *P. aeruginosa* (β -lactams, fluoroquinolones, trimethoprim, sulphonamides, chloramphenicol and others) (Poole, K., Clin. Microbiol. Infect. 10:12-26 (2004)).

Example 11: Microarray for specific detection of *S. aureus*

A) Strains and Cultures

[0121] Reference strains and clinical isolates: The following bacteria were purchased from the American Type Culture Collection (ATCC, Manassas, Va.) or the Deutsche Sammlung für Mikroorganismen und Zellkulturen (DSMZ, Braunschweig, Germany) and were used for evaluation of the specificity of the microarray: *Staphylococcus aureus* (ATCC 29213), *Staphylococcus epidermidis* (ATCC 12228; ATCC 18610) *Staphylococcus saprophyticus* (ATCC 14953), *Escherichia coli* (ATCC 25922), *Pseudomonas aeruginosa* (ATCC 27853). Ten clinical MRSA (methicillin resistant *S. aureus*) isolates were obtained from the inventors' clinical routine microbiology laboratory.

[0122] Bacterial cultures: Bacterial strains and clinical isolates were plated either onto sheep blood or onto Mueller-Hinton agar from 50% glycerol stocks. One colony was then picked and transferred to 5 ml Luria-Bertani (LB) broth and cultured overnight at 37°C.

[0123] Blood cultures: Aerobic blood culture bottles (BACTEC® Plus aerobic, Becton Dickinson, Heidelberg, Germany) were inoculated with 100 CFU of *S. aureus* after adding 10 ml blood from healthy volunteers. A BACTEC® 9240 blood culture system (Becton Dickinson) - a continuous reading, automated, and computed system detecting the growth of microorganisms by monitoring CO₂ production - was used for incubation according to the manufacturer's recommendations. Bottles with a positive growth index were removed from the incubator, and an aliquot of 1 ml of the blood culture suspension was taken aseptically with a needle syringe. The aliquot was equally divided, with one part for subculture on agar plates and CFU determination, and one part for DNA isolation.

[0124] Additionally, in order to test the microarray upon real conditions, samples were collected from ten clinical positive blood culture specimens cultivated under the same conditions as described above. Six of them were positive for different *S. aureus* strains and four for other bacterial species (*Staphylococcus epidermidis*, *Streptococcus mitis*, *E. coli* and *Klebsiella oxytoca*). Blood culture aliquots of 500 µl were used for DNA preparation.

B) Generation of the *S. aureus* specific microarray

[0125] About 140 gene segments of *S. aureus* genes, but also a few of CoNS (SEQ ID NO: 177,178,179), were selected from the literature and nucleotide databases in order to cover different functional categories (virulence factors,

EP 1 770 171 A1

species-specific metabolic and structural features, antibiotic resistance determinants). Tab. 6 provides the complete list of selected genes with gene symbol, gene function and SEQ ID NO of the segments.

5

10

15

20

25

30

35

40

45

50

55

Tab. 6: Selected *S. aureus* genes, selected segments (SEQ ID NO) and primers used for segment amplification (SEQ ID NO)

Gene symbol	Functions	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
<i>atl</i>	autolysin	99	AGCTGAGACGACACA AGATCAAA [1144]	TTATATTGCGTTTCAAGA GCTGC [1145]
<i>aroA</i>	3-phosphoshikimate 1-carboxyvinyl-transferase	84	ACCTTCAATATTGCGA TCC [1114]	TATTCCGATTATTAGGCG TAG [1115]
<i>aroC</i>	Chorismatsynthase	83	ATGAGATACCTAACAT CAGGAGAAATCA [1112]	GCTATTCTTCCATCTAATT TACGATCATA [1113]
<i>aroE</i>	Shikimatehydrogen ase	95	GTTATCAATTAATACA ACCCCTGAAGC [1136]	TGGAACATAATTCTCCTTC GATTGTTA [1137]
<i>aroF</i>	3-deoxy-D-arabino-heptulosonate-7-phosphate synthase	96	GTAGTTGAAAAATATG CCTGTTGGTGT [1138]	ATTACACCATTAAACGATA ATTGGCAT [1139]
<i>aroG</i>	Chorismat-Mutase	97	AGACTTATTATCTAAA CGTGGTGAACCTAGC [1140]	CAAATGATTATTGCGCGT CTCCTA [1141]
<i>asp23</i>	alkaline shock protein	98	AAAATTGCTGGTATC GCTGCA [1142]	GTCATTACATCATCAACTT GCATGTTA [1143]
<i>catal</i>	catalase	1	TAAATTGTTTAGATTA CAATCAGAGG [948]	TTCAAAAGTTTTTCGATGTT TCA [949]
<i>clpC</i>	endopeptidase	7	AATGCTGCTAACCTG CGTGAT [960]	CACGTCIAACCGCTTTAC TGATTG [961]

(continued)

Gene symbol	Functions	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
<i>clpP</i>	endopeptidase	8	AAAGTAAAGAGTAGA CTAAGCTGTCTGCTC [962]	ACCTAATAAAATTCAAAGC ATTGGGA [963]
<i>ctaA</i>	cytochrome biosynthesis	9	AAGAATTTAAAAATGGT TAGGTGTCGTA [964]	ACGTAATCGTTTTGTTC CAAATA [965]
<i>ctsR</i>	transcription repressor of class III stress genes homologue	10	AACGTCCCATGCCATT AATTTT [966]	TTGCGTTTCTATTATTAGCTC AGACA [967]
<i>dltA</i>	D-alanine-D-alanyl carrier protein ligase	11	ACAGAGCAGCAAAAG CGTTAGTG [968]	GACCTTGAATGAACCAT GACCAT [969]
<i>dltB</i>	hypothetical membrane transporter	12	CATATGGTGATTTTAC ATTCTTCTTAATTG [970]	CCTAACCATGTACTTTGT AACACTTTCA [971]
<i>dltC</i>	D-alanyl carrier protein	13	AAATTTATTAGCAGAA GTAGCAGAAAATG [972]	CTGAACCTCTCTAATGCTT CAACGATT [973]
<i>dhak</i>	Heat-shock-protein	14	TTTAGGCGAAAATATT GGTGAAGA [974]	TTTGTCGTCGTCCTTTACT TCGTT [975]
<i>elk T</i>	lantibiotic epilancin K7 translocator	15	GGTCTTATCGTTGCA GCTATCACTAT [976]	GAGCGTATCGCATAAATA ATCTTTTC [977]
<i>eno</i>	2-phosphoglycerate dehydrogenase	87	CGATGTTTCATCATTGG TACTGGTA [1120]	GGTGTTACTAAAGCAGTT GAAAACG [1121]
<i>glnA</i>	glutamine synthetase; belongs to the fem C locus	17	TAGTCACCATGAAGTT GCCCC [980]	CCTCTTGAAGATGGTACA CGGAT [981]

(continued)

Gene symbol	Functions	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
<i>glnR</i>	glutamine synthetase repressor; belongs to the fem C locus	18	CGAATGATGCAATCA GACGAAA [982]	CACCACGATTTATTGGCA AAGTT [983]
<i>griA</i>	DNA topoisomerase IV subunit A	19	TTGAATCACCAAAATTG AGGTTGT[984]	CAGTCGTTCAGATTTGAA TTTCTTT [985]
<i>griB</i>	gyrase-like protein beta subunit B	20	AAATCCATCGAGATG GTAATATATATCA [986]	AAACTTAAAATACCTTCTG AATATTGATCAT [987]
<i>groEL</i>	stress response; heat shock protein	21	GTATGCAATTTGATCG TGGTTAT [988]	TGTTAATGCATCGCCTTC AAC[989]
<i>groES</i>	stress response; heat shock protein	22	ATGTATGTTAGCACTC TTTAATGTTAAGTG [990]	GTTTAGTTGTTTTCATTT TCGTT [991]
<i>gyrA</i>	DNA gyrase subunit A	60	CATCATTAAATTCGATT CCCTGAAT [1066]	TCATTTACTTCATCTGCAT CCTCTT [1067]
<i>gyrB</i>	DNA gyrase subunit B	61	TCAATTTGACTTAAAA GAAGTTGGC [1068]	AAGATTTGTTGGCATATCC TGAGTTA [1069]
<i>hemA</i>	Glutamyl-transfer RNA reductase	23	TGTCATATTATCAACA TGTAATCGAACTG [992]	AATATCAGTAATTCCAGA ACCAAGAAGAT [993]
<i>hemB</i>	Porphobilinogene synthase	62	TTGATAGACATAGAA GATTGAGATCATCAG [1070]	ACTTGAGAAAATTGCTGTT TTAACAAGTAG [1071]
<i>hemC</i>	Porphobilinogene deaminase	63	GTAAATTAGTCGTTG GCTCCAGAAG [1072]	GGGATAGTGGTGTATGTC TTTTAGAAATA [1073]

(continued)

Gene symbol	Functions	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
<i>hemD</i>	Uroporphyrinogen III synthase	64	TGTTGATAACATTGCT GTGATAGGAA [1074]	AATGCATCGATTGTTGA TGTTCTA [1075]
<i>hemE</i>	Uroporphyrinogen decarboxylase	24	AAAATGATCAAAAGGT GAAGAAACATC [994]	AATCCTCGACATTTAATG CACCTAC [995]
<i>hemH</i>	Ferrochelatase	25	AATGGGATTATTAGTT ATGGCTTATGG [996]	GTGGATATGGATCATTAT TCTTTTCG [997]
<i>hemL</i>	GSA-1-Aminotransferase	26	ATGAGATATACGAAAT CAGAAGAAAGCA [998]	CTAATCTTAAAGTATCCAA TGTAGCTTCGTGTA [999]
<i>hemN</i>	oxygen-independent coproporphyrinogen oxidase	65	ACAGAATCAACCTGT AGATGAGTACTTAGA T [1076]	TGATATTCGTATAACGCA CACCATC [1077]
<i>hemY</i>	putative involved in a late step of protoheme IX synthesis	27	AAACAGCAAGATCCT AATATTGATGTAAC [1000]	CTCTACGTACAATCGATA CTAATTCATTATCT [1001]
<i>lepA</i>	GTP-binding protein	28	ATTAACAAAAATTGATT TACCTGCTGC [1002]	CTATAACCAAAACCTAAT GCTTGTGAC [1003]
<i>IrgA</i>	holin-like protein LrgA	29	AAAGACGCATCAAAA CCAGCA [1004]	GGCTAATGACACCTAAAG AGTTAACAACT [1005]
<i>IrgB</i>	holin-like protein LrgA	30	GATTAACCACTTAGCA CTAAACACACCT [1006]	AATGTTTAAACAAGCACTT CAGGCT [1007]

(continued)

Gene symbol	Functions	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
<i>lytM</i>	peptidoglycan hydrolase	31	CGACAAACACCCCAAC AAGCA [1008]	TGGCTGTTATACGCTTGG TTGT [1009]
<i>menB</i>	naphthoate synthase	32	GTTATCGTATTAACTG GTGAAGGTGATT [1010]	ACATTTAGTACATTACCG CCACCTAC [1011]
<i>menC</i>	o-succinylbenzoic acid synthetase	69	TTTAAGTCACAAATTG TAACACCGAA [1084]	TTAATTTAATTCTGGTCG GCTTTGT [1085]
<i>menD</i>	2-Succinyl-6-hydroxy-2,4-cyclohexadiene-1-carboxylase	33	CGTAAGGGAAGTAGT TATCAGTCCG [1012]	TTAGCTGTATACTCGAAA TCCAATCC [1013]
<i>menE</i>	O-succinylbenzoic acid-CoA ligase	34	ATGGACTTTTGGTTAT ATAAACAAAGCAC [1014]	TATTTCAGCAATGTCACC CGTATTA [1015]
<i>menF</i>	Isochorismate-Synthase	35	ATTGATAATTTACATC CAACACCTGC [1016]	TCACTATCTGGATCAGAA TCTTTAACAA [1017]
<i>murC</i>	UDP-N-acetylmuramoyl-L-alanine synthetase	70	CTTGGGGTGATGATG AACATCTA [1086]	AAGTGTGTGGTTGAAATA CTGCAA [1087]
<i>mutL</i>	DNA mismatch repair protein	38	TCGTTTACATCATAAT AATCATCAGAC [1022]	ACACAGAGAATAACCAGG AGAAGA [1023]
<i>mutS</i>	DNA mismatch repair protein	39	TTGTAATTCACCTTAAC TTCACCAATG [1024]	TCAAGTTGCGAAAATTAGC TGA [1025]

(continued)

Gene symbol	Functions	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
<i>pbg</i>	porphobilinogen synthase	41	GGTGTTCCAAACTCA AAAGATGATATA [1028]	TTGACACCATAACTCATTA TAGGAATATTG [1029]
<i>pdhB</i>	pyruvate dehydrogenase (lipoamide): subunit E1beta	43	TGACATTTCAAATCAA TCACATCG [1032]	TTGGTAACCAAAACATTTTC AGCTT [1033]
<i>pdhC</i>	dihydrolipoamide acetyltransferase: subunit E2	44	CTGGAGATACTATTG AAGAAGACGATG [1034]	TTGCTTTTACAGTTCTGTT TTCATCTAC [1035]
<i>pdhD</i>	dihydrolipoamide dehydrogenase: subunit E3	72	CAGGTAAATTAGTTGT AGTTGGTGGAG [1090]	AGTGGTAAACCTGGAACG ATATCA [1091]
<i>rpoB</i>	RNA polymerase B-subunit	73	ATTGTTACGTGCATTA GGTTTCTCA [1092]	TTTCTACTGGCTCGTCTAT AACGC [1093]
<i>rsbU</i>	putative operon encoding alternate sigma factor	45	TAGTTATCGAGATTAT CAAAGATTGGTAGA [1036]	GTAATTGTGAGT GTCCAT AAGAATCCA [1037]
<i>rsbV</i>	putative operon encoding alternate sigma factor	46	TGAATCTTAATATAGA AACCAACCACTCAAG [1038]	ACGATCTGACACACCTAA AATGTA [1039]
<i>rsbW</i>	putative operon encoding alternate sigma factor	47	TCTAAAGAAGATTTTA TCGAAATG [1040]	CCCACATTGTTATTTTCTT TGTAT [1041]
<i>sdcC</i>	serine-aspartate repeat protein multigene family	139	GAAAGTATTCTGTAG GTACTGCTTC [1224]	CCTTTATCAATCGCAATG TC [1225]
<i>sdcD</i>	serine-aspartate repeat protein multigene family	140	CGGGCAAATAAATAA AGATG [1226]	AACTGAAGATAAGCCGTT TG [1227]

(continued)

Gene symbol	Functions	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
<i>sdrE</i>	serine-aspartate repeat protein multigene family	141	TCTGTCGAGTTTTAT CAGTTGAAG [1228]	GCAAAACAAGATGATGCA ACG [1229]
<i>sgp</i>	G protein	48	TGAGATAGATGCAAT CATGTTTATGG [1042]	GAAATAGGTACAATCTCT GTAAAGTCCATATA [1043]
<i>sigB</i>	sigma factor B	78	GATGGTTCAACTGTTA CGCTATTA [1102]	CTCTGAAGTCGTGATACA TGCA [1103]
<i>sirR</i>	sit operon metal dependent repressor	49	AATATAATTGGGAAG AAGTACATCAAGAAG [1044]	ATATTAGCAAAATCGGTCT TATCTCTCA [1045]
<i>sodA</i>	superoxide dismutase	50	TTGAATTACCAAAATT ACCATACG [1046]	CTCCCAGAA TAATGAATG GTTTAAAT [1047]
<i>sodB</i>	superoxide dismutase	51	GCGCATTTTGAAAAG GCA [1048]	GGGATAGCACGTAAAAAGT GGAA [1049]
<i>srtA</i>	transpeptidase;sorta se that anchors surface proteins to the cell wall	91	CTGGTCCTGGATATA CTGGTTCTTT [1128]	GATTAATGACAAATCGCTG GTGTG [1129]
<i>sstA</i>	iron transport proteins	52	TTCGTTGTTTCATAGGT GCGAGT [1050]	CTTTGAACAGCACACTCGTG CG [1051]
<i>ssfB</i>	iron transport protein	53	TATTGCCTTATTTAGA TGTATTGCTTTT [1052]	TCGTAGCTTCAAAACACAT TTTCAA [1053]

(continued)

Gene symbol	Functions	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
<i>ssfC</i>	iron transport protein	54	AATCAAATGATATTGG AAGATATTAGCA [1054]	TATTCAGTATCTTGTGCTA TTGTCATTG [1055]
<i>ssfD</i>	iron transport protein	55	CATGCGGTAACAATT CTGATAAAGA [1056]	AATTTTCGCITTTAGGTGC AGCT [1057]
<i>stpC</i>	Potential ABC transporter	92	TTAACAAATAGAACATT TAACAAAGAAG [1130]	CTCGAAATTAAGAAAAGTA ACACC [1131]
<i>tag</i>	DNA-3-methyladenine glycosidase	81	GCATTTGGTACTAAA GATCCAGTCTACT [1108]	AACGAAAATACTGTTACT GGACCTAAAA [1109]
<i>trx</i>	thioredoxin reductase	56	GCTGACTATGAAGGT AAAGCTGACA [1058]	CAGCTAAGTTTTCTTTTG GTTGA [1059]
<i>tyrA</i>	prephenate dehydrogenase	82	ATTCATTTAGTCAGTG GTCATCCAAT [1110]	GCTGTCGAATCATTCTA AAATATACGT [1111]
<i>yhiN</i>	yhiN-protein	57	CAATTGGCTTTCGATT ATTGTTGTA [1060]	AACCAATGATCTAGTGA AATGTTAAACCT [1061]
	Virulence Factors			
<i>cflA</i>	clumping factor A	3	GCTTCAGTGCTTGTA GGTACGTTAA [952]	TTGATTCACTAATTCCTCC GCAT [953]
<i>cflB</i>	clumping factor B	4	TAATGATACATCTGAT ATTAGTGCAAAACAC [954]	TTTAGCATCAGCAGCATT TACTACC [955]

(continued)

Gene symbol	Functions	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
<i>cna</i>	collagen adhesin	85	TCGAGGAATTAAACAA AGGTC [1116]	ATCAGGTTTAGTTGGTGG TG [1117]
<i>coa</i>	staphylocoagulase	5	TGTTAGGGATACACA ACATAAAACTGA [956]	GATTTGTTTCAGATTTCAC CGTATTT [957]
<i>ebpS</i>	cell surface elastin binding protein	86	GACCTAGCCATCAA GACAG [1118]	GCATTATTAGAGGCATGT GG [1119]
<i>EDIN</i>	Epidermal cell differentiation inhibitor	113	TATCTTTAGCATTAAAG CGTTTATTCAAT [1172]	TTTCTAACTAGATTTTCAT CATACTGGC [1173]
<i>eta</i>	exfoliative toxine A precursor	114	TGCATTTAATTTACCA AAAGAGCTT [1174]	TGGATAGCCTATTAAATTC GAGTTTG [1175]
<i>etb</i>	exfoliative toxine B precursor	115	AAGAGCTTTATACACA CATTACGGATAA [1176]	CAAAATATTGAGAATCAT TGAACATTTTC [1177]
<i>fbpA</i>	fibrinogen binding protein	88	CTCTTTTACCTTTGA CGTTGGATT [1122]	GCCAAAATAGTGCTTCAA TATCAGA [1123]
<i>fib</i>	fibrinogen binding protein	89	GCTTTTCTGTGTGCAC TGACAGT [1124]	AGCGAAGGATACGGTCC AAG [1125]
<i>fnbA</i>	fibronectin-binding protein	93	TTACATCTGTACCCGT TTCCACTT [1132]	AAACTGCACAAACCAGCAA ATATAGA [1133]
<i>fnbB</i>	fibronectin-binding protein	90	CCGCCTTAATTCCTTC TCCAAA [1126]	GCGAGTTGATTGCCATC GG [1127]

(continued)

Gene symbol	Functions	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
<i>geh</i>	lipase precursor; glycerol ester hydrolase	59	GAACAAGGGAATGCG ATAACG [1064]	AGGTGCAGTTTTATCATT AGACGG [1065]
<i>hla</i>	alpha-hemolysin	120	ATGATGAAAAATGAAA ACACGTATAGTC [1186]	ATTTGAGCTACTTCATTAT CAGGTAGTTG [1187]
<i>hlb</i>	beta-hemolysin	121	TGTTAATAAAGGCACT CCAGAGTTC [1188]	CTTTGATTGGGTAATGAT CTGAAAA [1189]
<i>hld</i>	delta-hemolysin	110	TTTTATCTTAATTAAG GAAGGAGTGATTTC [1166]	TAGTGAATTTGTTCACTG TGTCGATAA [1167]
<i>hlgA_C</i>	gamma-hemolysin component A; C-terminus	117	ACTGAAGTAGAAAAGT CAGAACTCTAAAGGT [1180]	GTGTTTTCCAGTTCACCTC ATATTTAACT [1181]
<i>hlgA_N</i>	gamma-hemolysin component A; N-terminus	116	CTTAAAATTAAATAGA AAGAAAGT [1178]	ATGTTTTGAGTTATAGCT AATCGTT [1179]
<i>hlgB</i>	gamma-hemolysin component B	118	ATAGCTTCCACCCAAC ATATGGTAA [1182]	ATTTCACTTTGTGATTTTC CCAATC [1183]
<i>hlgC_C</i>	gamma-hemolysin component C; C-terminus	119	AATCAGCATTTGATAG CGATTTATTT [1184]	CCAATTGACTTCATATTC ACAGTGTA [1185]
<i>hysA</i>	hyaluronate lyase	111	AAACATCAAATCGCT GTGGCT [1168]	GTGAAAAGATGCCCTTGAG TGG [1169]
<i>lgGbg</i>	IgGbinding protein	112	GGGTTCTTGCTGTCTT TAAGTGATT [1170]	TATATCTCGAAGTTGCTA GTTGGGG [1171]

(continued)

Gene symbol	Functions	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
<i>lip</i>	lipase; glycerol ester hydrolase	68	TTTAAAGTGGTGGAC AAGCACAA [1082]	GATTGTTATTAGCGTTTG AATCTTGAC [1083]
<i>lukF</i>	leucocidin F	122	CATATGGCAGAGATA GTTATCATTTCAACT [1190]	GATGTATGAGTTGCTCTT ATGTGATCTTTA [1191]
<i>lukS_C</i>	leucocidin S; C-terminus	124	AGTGTTCAATGGGA ATAAAAGCTA [1194]	GATCCTTCTAAATAACTAT TGCCATAGTG [1195]
<i>lukS_N</i>	leucocidin S; C-terminus	123	AACATTGTCGTTAGG AATAATCACT [1192]	AATCAAAGCATCTTTGTTA TACTTT [1193]
<i>NAG</i>	N-acetylglucosaminidase; cytotoxin	125	ACTCAAACAGTTAGC AAGATTGCTC [1196]	TGCATTTACCCCAACCAGT GC [1197]
<i>nuc</i>	nuclease	71	GCGATTGATGGTGAT ACGGTT [1088]	TTTTCGCTTGCTTCACT TTT [1089]
<i>sak</i>	staphylokinase	126	CGAGTTATTTTGAACC AACAGGC [1198]	GCGCAAAGATCGAAGTCA CTTAT [1199]
<i>sea</i>	staphylococcal enterotoxin A precursor	127	CTGATGTTTTTGATGG GAAGGTT [1200]	TGCATGTTTTTCAGAGTTA ATCGTTT [1201]
<i>seb</i>	staphylococcal enterotoxin B precursor	128	ATATATTCTATTAAGG ACACTAAGTTAGGGA AT [1202]	AGTTAGGTAATCTAATTCT TGAGCAGTCA [1203]
<i>sec</i>	staphylococcal enterotoxin C precursor	129	GGCACATGATTTAATT TATAACATTAGTG [1204]	ATTCCTAGCTTTTATGTCT AGTTCTTGAG [1205]

(continued)

Gene symbol	Functions	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
<i>spa</i>	immunoglobulin G binding protein A precursor	94	GGTATTGCATCTGTAA CTTTAGG [1134]	AGGTTAGCACTTTGACTT GG [1135]
<i>spv8</i>	V8 serine protease gene	137	ACAAACGCAGTCAAG CAACA [1220]	CATTGTTGCTGGTTTAAC TACTTCAC [1221]
<i>tst</i>	toxic shock syndrom toxin	138	AAATTACCTACTCCA ATAGAACTACCTTT [1222]	TTTCTGCTTCTATAGTTTT TATTCATCA [1223]
	Antibiotic Resistance Determinants			
<i>aacA-aphD</i>	bifunctional aminoglycoside modifying enzyme	843	ICCTCATAAAAATAA C CCAAGAGC [2632] T	CTTTTCTTTTGCATAAACC TTTTTTC [2633]
<i>aadD</i>	aminoglycoside acetyl transferase; kanamycin resistance	837	AAGCAGAGTTTCAGCC ATGAATG [2620]	CAGATGCGATGATGCAGA CC [2621]
<i>aphA3</i>	3' 5'-aminoglycoside acetyltransferase; kanamycin resistance	845	CTGGTGGGAGAAAAT GAAAACC [2636]	CCAGTTTTTCGCAATCCAC ATC [2637]
<i>blaI</i>	regulator protein	814	AGCAAGTTGAAATAT CTATGGCTGA [2574]	TCATTTAAAAATGTCICGCA ATTCTT [2575]
<i>blaR</i>	beta lactamase repressor	790	GAAAATTCACGTATGT CATGGAATC [2526]	GCATTTTTCCCAGATGGC TT [2527]
<i>blaZ</i>	beta-lactamase	827	GATAAGAGATTTGCC TATGCTTCAA [2600]	TGCTTAATTTTCCATTTCG GAT [2601]
<i>cadA</i>	Probable cadmium-transporting ATPase (Cadmium efflux ATPase)	897	TTGGATAGTTCAACAA AAACATTAAACA [2740]	CATTTTATCTTCTGTTAC CACTGGTT [2741]

(continued)

Gene symbol	Functions	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
<i>cadC</i>	Cadmium efflux system accessory protein homolog	908	TAGCAACCTCCCTTTC ATAC [2762]	ACAAAAGATATGTGTGAA GTTACC [2763]
<i>cat</i>	chloramphenicol acetyltransferase	862	CCTTCTTTGATTATG CAATTATGG [2670]	GAAGCATGGTAACCATCA CATACA [2671]
<i>dfrA</i>	S1 dihydrofolate reductase, trimethoprim resistance	859	ATGACATTATCAATAA TTGTCGCTCA [2664]	AACATGACCAGATAAATC TTTAATTTTCAT [2665]
<i>ermA</i>	rRNA methylase	852	TAGCTATCTTATCGTT GAGAAGGGAT [2650]	AAAGAAAATTGTTCCCTTCG ATAGTTTATT [2651]
<i>ermB</i>	adenine methylase	851	AACCGATACCGTTTAC GAAATTG [2648]	CGCTTGTAGAAATCCTTCT TCAACA [2649]
<i>ermC</i>	adenine methylase	846	AACACAGTCAAAACTT TATTACTTCAAAAC [2638]	TTGCATAATTATGGTCTA TTTCAATG [2639]
<i>femA</i>	factor essential for methicillin resistance	801	TAGGATTTGAACATAC TGGATTCCA [2548]	AAAGGCACTAACACACGG TCTTT [2549]
<i>femD</i>	putative factor essential for methicillin resistance	16	TCAGGTGAAATGTTA GAATCAGCA [978]	TAAGTCACCAAAATAAGAA TGGCG [979]
<i>fmhA</i>	similar to Staphylococcus aureus FemA and FemB proteins	825	GTTAACGATTGATGA AACGCAAA [2596]	TGCACCATCTTGTTCATTT TGTT [2597]

(continued)

Gene symbol	Functions	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
<i>fthB</i>	essential for addition of glycine 1 to peptidoglycan precursor	818	GAGTTATTAATAGTT TTGAACGCCG [2582]	TTCAGGATGTTCCCTTTCT AAAGCT [2583]
<i>linA</i>	lincosaminide nucleotidyltransferase	850	GATATAGGATACAAA ATAGAAGTTGATTGG [2646]	GGTCTTTTCTGTAAATTC ATAACCG [2647]
<i>mecA</i>	penicillin binding protein 2'	802	ATATGAGATAGGCAT CGTTCCAAA [2550]	CTAATAGATGTGAAGTCG CTTTTCCT [2551]
<i>mecI</i>	med protein	812	TAATAAAACGTATGAA ATATCATCTGCA [2570]	TTTCATCTTGTGATAGATC TTCTTTTTC [2571]
<i>mecR</i>	med protein	798	TTTAAAGAATGGAAC CAAGATCAAA [2542]	TCGCCITTTTAAATGTGTA GCAA [2543]
<i>mreA</i>	ABC transporter	907	GCAGTATTAGTACTTG ATGAACCAACG [2760]	GACAAAACGTACAGGATG TCCATAA [2761]
<i>mreB</i>	ABC transporter	36	ATGAGGTACTCTTTAA TTAGTGGTATCTTGA [1018]	ATCAGCTAATGAAATGAA GATTGCA [1019]
<i>mreR</i>	ABC transporter	37	GAAAATACAGAACTT GATGGTGAATG [1020]	GCAAGACTCACATACACC ATAAACTTC [1021]
<i>msrA</i>	methionine sulfoxide reductase	854	TCATAAGCTGACAGA TTTTCGATCC [2654]	CTTTTAGATGAACCTACA AATCACTTGG [2655]

(continued)

Gene symbol	Functions	gene probe SEQ ID NO	Primer forward [SEQ ID NO]	Primer reverse [SEQ ID NO]
<i>norA</i>	quinolone resistance protein	904	TTAGCTTTCAT ⁻ AATGT CAGTTGTATTGA [2754]	ACAGTGTTC ⁻ AAATGCCG ATAAA [2755]
<i>pbpF</i>	penicillin-binding protein Pbp2b	42	AACACAATCGGAAAT GTTGGATAC [1030]	CTATCCCAATCCATAGAC GTGTTAA [1031]
<i>qacA</i>	quaternary ammonium compound resistance protein	885	CAATGGTTACAGGTT GTGGAAGA [2716]	GCCCACTACAGATTCTTC AGCTAC [2717]
<i>spc</i>	adenyltransferase AAD9	844	ATATCAGGAAAAGATT GGAAATACGG [2634]	AAAGAGGTATAGCCCCATT CTGCA [2635]

[0126] In order to obtain a high specificity level, each selected gene was compared to all other gene sequences available in the NCBI database using the BLAST algorithm. From that comparison, regions (ranging from 104 to 1434 bp) devoid of apparent homology with genes of other bacterial species and *Homo sapiens* were defined and amplified by PCR using specifically designed primers (see Tab. 6). A mixture of the total DNA from three different *S. aureus* reference strains and 100 clinical isolates was used as template for amplification of *S. aureus* gene segments, increasing therefore the chances to amplify more seldom occurring virulence and antibiotic resistance genes. PCR products were cloned into the plasmid pCR 2.1 -Topo Vector (Invitrogen, Karlsruhe, Germany) which were used to transform competent *Escherichia coli* (XL-1-Blue) cells using the Calcium Chloride protocol (Seidman, C.E. et al., in: Ausubel, F.M. (ed.), Current Protocols in Molecular Biology, John Wiley & Sons, Inc. (2000)). Recombinant plasmids containing selected gene segments were screened by restriction analysis and verified by sequencing. The plasmid library constructed was used for re-amplification and production of the bulk DNA (10 µg at a concentration of 1 µM) from each clone necessary for printing the microchips. A Microgrid II spotter (BioRobotics, Cambridge, UK) and CMT-GAPS™ coated glass slides (Corning Incorporated, Corning, USA) were used. The complete array of 140 segments of genes was spotted in 3 replicates per slide.

C) DNA purification

a) Sample preparation

[0127] Bacterial cultures: Overnight cultures (5 ml) were harvested at 2,560g for 10 minutes. After discarding the supernatant the pellet was washed in 1 ml TE (10 mM Tris-HCl, pH 7.5 - 1 mM EDTA) and recovered by centrifugation at 17,900 g for 2 min.

[0128] Blood cultures: One ml of blood culture was mixed with 1 ml 0.1% Triton®-X-100 and kept at room temperature for 5 min in order to disrupt blood human cells and resolve bacterial clumps. Bacterial cells were then harvested at 17,900 g for 10 min. Pellets were washed in 1 ml TE and recovered as described above.

b) Purification of DNA

[0129] Pellets of harvested cells were resuspended in 500 µl lysis buffer (20 mM Tris-HCl, pH 8.0 - 2 mM EDTA, pH 8.0 - 1.2% Triton®-X-100). To promote bacterial lysis, lysozyme and lysostaphin (Sigma, Taufkirchen, Germany) were added to reach a final concentration of 0.8 mg/ml and 0.2 mg/ml respectively. To lyse Gram negative bacterial cells, only lysozyme in the indicated concentration was used. Samples were then incubated for one hour at 37°C. After treatment with Proteinase K (1 mg/ml) (Sigma, Taufkirchen, Germany) for 5 hours at 55 °C under mild agitation, the samples were heated at 65°C for 30 min to inactivate Proteinase K and then cooled down to 37°C. Finally, a RNase A treatment (0.2 mg/ml) was carried out for 1 hour at 37°C. A pretreatment with CTAB (Cethyltrimethylammonium bromide) was performed in order to release DNA from polysaccharide DNA complexes (Murray, M.G. and Thopson, W.F., Nucl. Acid Res. 8: 4321-4325 (1980)). Salt concentration was adjusted to 0.7 M by adding 5 M NaCl. After thoroughly mixing, a 10% CTAB-0.7M NaCl solution was added to adjust the CTAB concentration to 1%.

[0130] The mixture was subsequently incubated under rotation for 20 min at 65°C and then extracted with one volume of chloroform/isoamyl alcohol (24:1). The samples were spun in a microcentrifuge (17,900 g) at room temperature. The aqueous phase was extracted once with chloroform/isoamyl alcohol (24:1), once with phenol/chloroform/isoamyl alcohol (25:24:1) and finally with chloroform/ isoamyl alcohol (25:24:1). Genomic DNA in the aqueous phase was sonified (3 x 10 s at 12% amplitude with 20 s breaks between pulses) in a Digital Sonifier (Branson, Schwaebisch Gmuend, Germany) to obtain fragments of around 1 kb, then precipitated with one volume of isopropanol and pelleted by centrifugation for 30 min at 4°C in a microcentrifuge at 17,900 g. The pellets were washed in 70% ethanol and resuspended in 50-100 µl TE (10 mM Tris-HCl, pH 7.5 - 1 mM EDTA). This DNA preparation was used when a high yield (hundreds of µg) was necessary, for example to prepare samples for several hybridisations experiments.

[0131] A second protocol using DNeasy Tissue Kit (QIAGEN, Hilden, Germany) adapted to bacterial cells and allowing DNA preparation in two hours, was also used when fast preparation was the priority. The abbreviations below pertain to the manufacturer's abbreviations for buffers used in the kit. The bacterial pellet was resuspended in 1 ml ddH₂O and the cell suspension frozen in liquid N₂ for 1 minute and then placed in a 60°C thermo-block for 2 minutes. Such a treatment was repeated once and bacteria were centrifuged again for 5 minutes at 14,000g. The resulting pellet was resuspended in 180 µl lysis buffer (20 mM Tris-HCl, pH 8.0 - 2 mM EDTA, pH 8.0 - 1.2% Triton-X-100). Specifically for *S. aureus* DNA preparation, lysostaphin (0.2mg/ml) was added and incubated 1 hour at 37°C. After, 200 µl of buffer AL (for gram positive bacteria) or buffer ATL (for gram negative) and 25 µl of the Proteinase K solution delivered with the kit were added and incubated at 70°C for 30 minutes. 200 µl of 100% ethanol were added and the suspension transferred to a DNeasy Mini Column placed into a collection tube. The column was centrifuged at 6,000 g for 1 minute, washed first with 500 µl of buffer AW1, centrifuged at 6,000 g for 1 minute, washed then with 500 µl of buffer AW2, and centrifuged

at 14,000 g for 3 minutes. The column was then placed in a 1.5 ml tube and centrifuged once more at 14,000 g for 1 minute. DNA was eluted with 130 μ l of buffer AE. After one minute the column was centrifuged at 6,000g for 1 minute. The eluate was re-loaded in the column and centrifuged again under the same conditions in order to increase the DNA yield.

D) DNA labelling

[0132] Different amounts of DNA (5 ng to 5 μ g) were labelled with 3 μ l either of Cy5-dCTP or Cy3-dCTP (Amersham Pharmacia Biotech Europe, Freiburg, Germany) by random priming (1 x random primer/Klenow reaction buffer) using Klenow Polymerase (50units) (both from BioPrime DNA labelling Kit, Invitrogen, Karlsruhe, Germany) in the presence of 0.12 mM dATP's, dGTP's and dTTP's and 0.06 mM dCTP's, in a total volume of 50 μ l. After 2 hours incubation at 37°C, the reaction was interrupted by adding 5 μ l of 0.5 M EDTA and the probe purified either by MiniElute PCR or QIAquick Purification Kits (QIAGEN, Hilden, Germany), depending on the amount of labelled DNA applying two wash and two elution steps.

E) Hybridisation and detection procedure

[0133] All experiments described in the present example represent co-hybridisation of two different DNA samples labelled respectively with Cy3 and Cy5. Cy3 and Cy5 belong to the cyanine family of fluorophores and were used as reporter molecules. The photochemical properties of the two CyDye fluors were as follows: Absorption maximum at 550 nm and emission maximum at 570 nm for Cy3 and for Cy5 at 649 nm and 670 nm, respectively.

[0134] After purification, Cy3 and Cy5 labelled DNA were pooled and 10 μ g of Salmon Sperm DNA and 50 μ g of polyA DNA were added. The mixture was frozen in liquid nitrogen and lyophilized in the dark. DNA microchips were automatically hybridised in a GeneTac Hybridisation Station (Genomic Solutions, Harvard, USA) following the Corning protocol.

[0135] Shortly, 110 μ l of pre-hybridisation buffer (25% Formamide, 5x SSC, 0.1% SDS, 10 mg/ml BSA) were added to each slide and incubated for one hour at 42°C. Lyophilized samples were resuspended in 110 μ l of hybridisation buffer (25% Formamide, 5x SSC, 0.1% SDS), denatured for 3 minutes at 90°C, added to the slides, and incubated 4 hours at 42°C. After several washing steps using successively 2 x SSC/0.1 % SDS, 0.1 x SSC/0.1 % SDS, and 0.1 x SSC, slides were dried by a 2 min centrifugation step (1000 g) and read in a Scan Array 5000 (Perkin Elmer, Boston, USA) using emission filters for Cy3 and Cy5 in two separate channels. Fluorescence intensities as hybridisation indicators were then analyzed by the software ImaGene (BioDiscovery, Marina Del Rey, USA). Spots were found and segmented in order to select areas of recognizable signals for analysis. Intensity of fluorescence of each spot was measured, signal to local background ratios were calculated, spot morphology and deviation from expected spot position were considered. Cut off values for those parameters were empirically determined in pilot experiments and used to tag spots either as positive or as negative.

F) Validation of the detection system

[0136] The experimental approach adopted in present example required dual-dye hybridisations. It was therefore necessary to verify at first whether DNA samples from the same source, labelled with one or the other fluorochrome, would produce the same hybridisation pattern. Co-hybridisation experiments, combining two identical samples of 2 μ g of *S. aureus* DNA, produced strictly similar hybridisation results whatever fluorochrome was used for labelling (Fig. 2A). For better presentation gray scale images from scanning were converted in false-color, where green and red color represent intensity of Cy3 and Cy5 fluorochromes respectively. All spots showed double-hybridisation - yellow color meaning the overlay between green (here assigned to Cy3 labelled DNA) and red signals (Cy5 labelled DNA). Signal intensities from both channels strongly correlated ($r^2=0,97$) (Fig. 2B).

G) Sensitivity of detection

[0137] *S. aureus* DNA samples in decreasing amounts (from 2 μ g to 5 ng) were labelled and hybridised in order to determine the minimum amount of DNA producing the expected hybridisation pattern for a certain strain. Such expected patterns were defined as those produced by the hybridisation of 2 μ g of DNA. From 2 μ g to 50 ng no significant differences in the hybridisation pattern were observed with no false negative spots. Detection of 20 ng DNA was still satisfying with only 5% of false negative and false positive. However, 5 ng of labelled DNA yielded weak signals with almost 95% of false negative spots (data not shown). The limit of sensitivity of the *S. aureus* microarray was then considered as being 20 ng DNA which corresponds approximately to 7×10^6 *S. aureus* CFU (*S. aureus* genome 2.5×10^6 bp. 2.8 fg DNA per cell).

H) Specificity of detection

[0138] The specificity of the *S. aureus* microchip was demonstrated by six independently performed co-hybridisation experiments. Visual examination of pictures showing results of co-hybridisation of *S. aureus* DNA with *Pseudomonas aeruginosa* or *Escherichia coli* DNA revealed no cross-hybridisation between *S. aureus* selected gene segments and DNA probes from those Gram negative bacteria (data not shown). Transcribing these data in a bar code showing positive or negative spots (Fig. 3A and B) confirmed that only the *S. aureus* DNA sample hybridised with spotted probes.

[0139] The specificity of the microarray could be demonstrated even below the genus level. As shown in Fig. 4, some spotted *S. aureus* probes cross-hybridised with *S. epidermidis* and *S. saprophyticus* DNA samples. This is not surprising as these species are phylogenetically closely related. However, genes coding for *S. aureus* specific proteins as nuclease (*nuc*), clumping factors A and B (*clfA* and *B*), protein A (*spa*), V8 serine protease (*sprV8*) and alpha and beta hemolysins (*hla* and *hly*) exclusively hybridised with *S. aureus* DNA. The presence/absence of such genes allowed unambiguous discrimination between *S. aureus* and CoNS.

I) *S. aureus* strain profiling

[0140] The principle of the *S. aureus* microarray was tested as a tool for strain profiling. A distinctive hybridisation pattern could be established for reference strains and 10 selected clinical isolates. For instance when DNA from clinical isolates T100 and T103 were labelled with Cy5 and Cy3, respectively, and co-hybridised, both isolates were identified as *S. aureus*, since both contained species-specific genes as e.g. clumping factor A and B (Fig. 5A).

[0141] Moreover, both strains are methicillin resistant (*mecA* positive), but only T100 contained the beta-lactamase gene. The hybridisation of T103 DNA reveals the presence of *ermA*, *ermB* and *aacA* genes indicating that the strain is resistant to erythromycin and aminoglycosides.

[0142] Apparently, T103 harbors the genes encoding enterotoxins A (*eta*) and B (*etb*) while in T100 the gene encoding enterotoxin C (*etc*) is present. The presence or absence of these genes was confirmed by PCR assays (Fig. 5B) and the antibiotic resistance was verified by classical antibiograms (Sahm, D. & Washington, J. A. (1991). Antibacterial susceptibility tests: dilution methods. In: Manual of Clinical Microbiology (Balows, A., Ed.), pp. 1105-16. American Society for Microbiology, Washington DC, USA) (data not shown).

J) Detection of *S. aureus* in spiked positive BACTEC® cultures

[0143] One possible application of the *S. aureus* microarray is to detect the bacterium growing in blood culture, i.e. after the BACTEC® signals bacterial growth. Blood culture bottles were spiked with 100 CFU of *S. aureus*. After the automated culturing system indicated bacterial growth, 1 ml was withdrawn for DNA extraction.

[0144] As shown in Fig. 6A, DNA samples prepared from sterile blood culture show no crosshybridisation with spotted *S. aureus* probes. A 2 µg DNA sample derived from blood culture containing *S. aureus* cells revealed a hybridisation pattern almost completely identical to a DNA sample isolated from an overnight LB culture inoculated with a *S. aureus* colony (Fig. 6B).

[0145] These data underscore the high sensitivity and specificity of the detection system since blood culture DNA comprises a mixture of human and bacterial DNA. Co-hybridisation between DNA from blood culture positive for *S. aureus* and CoNS DNA also allowed clear identification since only the *S. aureus* probe hybridised to *S. aureus* species-specific genes (data not shown).

K) Detection of *S. aureus* in positive BACTEC® cultures inoculated with clinical specimens

[0146] Co-hybridisation with DNA from clinical blood cultures positive for *S. aureus* and CoNS (*Staphylococcus epidermidis*), *Streptococcus mitis*, *E. coli* and *Klebsiella oxytoca* allowed clear species identification since the *S. aureus* probes hybridised to *S. aureus* species-specific genes only. *Staphylococcus epidermidis* positive blood culture DNA hybridised to staphylococcal metabolic genes and to some antibiotic resistance determinant genes only. No cross-hybridisation was detected between DNA from the two gram-negative strains and the *Streptococcus* strain and *S. aureus* spotted gene probes (data not shown).

Sequence Listing - Free text

[0147] a) Probe sequences

EP 1 770 171 A1

SEQ ID NO	Probe name	Template source
1	cataSaur_1_1	<i>Staphylococcus aureus</i>
2	cataSaur_1_2	<i>Staphylococcus aureus</i>
3	clfA_1_1	<i>Staphylococcus aureus</i>
4	clfB_1_1	<i>Staphylococcus aureus</i>
5	coa_1_1	<i>Staphylococcus aureus</i>
6	coa_1_2	<i>Staphylococcus aureus</i>
7	l-clpC_1_1	<i>Staphylococcus aureus</i>
8	l-clpP_1_1	<i>Staphylococcus aureus</i>
9	l-ctaA_1_1	<i>Staphylococcus aureus</i>
10	l-ctsR_1_1	<i>Staphylococcus aureus</i>
11	l-dltA_1_1	<i>Staphylococcus aureus</i>
12	l-dltB_1_1	<i>Staphylococcus aureus</i>
13	l-dltC_1_1	<i>Staphylococcus aureus</i>
14	l-dnaK_1_1	<i>Staphylococcus aureus</i>
15	l-ekT_1_1	<i>Staphylococcus aureus</i>
16	l-femD_1_1	<i>Staphylococcus aureus</i>
17	l-glnA_1_1	<i>Staphylococcus aureus</i>
18	l-glnR_1_1	<i>Staphylococcus aureus</i>
19	l-grlA_1_1	<i>Staphylococcus aureus</i>
20	l-grlB_1_1	<i>Staphylococcus aureus</i>
21	l-groEL_1_1	<i>Staphylococcus aureus</i>
22	l-groES_1_1	<i>Staphylococcus aureus</i>
23	l-hemA_1_1	<i>Staphylococcus aureus</i>
24	l-hemE_1_1	<i>Staphylococcus aureus</i>
25	l-hemH_1_1	<i>Staphylococcus aureus</i>
26	l-hemL_1_1	<i>Staphylococcus aureus</i>
27	l-hemY_1_1	<i>Staphylococcus aureus</i>
28	l-lepA_1_1	<i>Staphylococcus aureus</i>
29	l-lrgA_1_1	<i>Staphylococcus aureus</i>
30	l-lrgB_1_1	<i>Staphylococcus aureus</i>
31	l-lytM_1_1	<i>Staphylococcus aureus</i>
32	l-menB_1_1	<i>Staphylococcus aureus</i>
33	l-menD_1_1	<i>Staphylococcus aureus</i>
34	l-menE_1_1	<i>Staphylococcus aureus</i>
35	l-menF_1_1	<i>Staphylococcus aureus</i>
36	l-mreB_1_1	<i>Staphylococcus aureus</i>
37	l-mreR_1_1	<i>Staphylococcus aureus</i>
38	l-mutL_1_1	<i>Staphylococcus aureus</i>
39	l-mutS_1_1	<i>Staphylococcus aureus</i>

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Template source
40	I-NAG_1_1	<i>Staphylococcus aureus</i>
41	I-pbg_1_1	<i>Staphylococcus aureus</i>
42	I-pbpF_1_1	<i>Staphylococcus aureus</i>
43	I-pdhB_1_1	<i>Staphylococcus aureus</i>
44	I-pdhC_1_1	<i>Staphylococcus aureus</i>
45	I-rsbU_1_1	<i>Staphylococcus aureus</i>
46	I-rsbV_1_1	<i>Staphylococcus aureus</i>
47	I-rsbW_1_1	<i>Staphylococcus aureus</i>
48	I-sgp_1_1	<i>Staphylococcus aureus</i>
49	I-sirR_1_1	<i>Staphylococcus aureus</i>
50	I-sodA_1_1	<i>Staphylococcus aureus</i>
51	I-sodB_1_1	<i>Staphylococcus aureus</i>
52	I-sstA_1_1	<i>Staphylococcus aureus</i>
53	I-sstB_1_1	<i>Staphylococcus aureus</i>
54	I-sstC_1_1	<i>Staphylococcus aureus</i>
55	I-sstD_1_1	<i>Staphylococcus aureus</i>
56	I-trx_1_1	<i>Staphylococcus aureus</i>
57	I-yhiN_1_1	<i>Staphylococcus aureus</i>
58	epiP-bsaP_1_1	<i>Staphylococcus aureus</i>
59	geh_1_1	<i>Staphylococcus aureus</i>
60	gyrA_1_1	<i>Staphylococcus aureus</i>
61	gyrB_1_1	<i>Staphylococcus aureus</i>
62	hemB_1_1	<i>Staphylococcus aureus</i>
63	hemC_1_1	<i>Staphylococcus aureus</i>
64	hemD_1_1	<i>Staphylococcus aureus</i>
65	hemN_1_1	<i>Staphylococcus aureus</i>
66	hsdS_1_1	<i>Staphylococcus aureus</i>
67	hsdS_2_1	<i>Staphylococcus aureus</i>
68	lip_1_1	<i>Staphylococcus aureus</i>
69	menC_1_1	<i>Staphylococcus aureus</i>
70	murC_1_1	<i>Staphylococcus aureus</i>
71	nuc_1_1	<i>Staphylococcus aureus</i>
72	pdhD_1_1	<i>Staphylococcus aureus</i>
73	rpoB_1_1	<i>Staphylococcus aureus</i>
74	SAV0431_1_1	<i>Staphylococcus aureus</i>
75	SAV0439_1_1	<i>Staphylococcus aureus</i>
76	SAV0440_1_1	<i>Staphylococcus aureus</i>
77	SAV0441_1_1	<i>Staphylococcus aureus</i>

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Template source
78	sigB_1_1	<i>Staphylococcus aureus</i>
79	spa_1_2	<i>Staphylococcus aureus</i>
80	sstC_1_1	<i>Staphylococcus aureus</i>
81	tag_1_1	<i>Staphylococcus aureus</i>
82	tyrA_1_1	<i>Staphylococcus aureus</i>
83	l-aroC_1_1	<i>Staphylococcus aureus</i>
84	l-aroA_1_1	<i>Staphylococcus aureus</i>
85	l-cna_1_1	<i>Staphylococcus aureus</i>
86	l-ebpS_1_1	<i>Staphylococcus aureus</i>
87	l-eno_1_1	<i>Staphylococcus aureus</i>
88	l-fbpA_1_1	<i>Staphylococcus aureus</i>
89	l-fib_1_1	<i>Staphylococcus aureus</i>
90	l-fnbB_1_1	<i>Staphylococcus aureus</i>
91	l-srtA_1_1	<i>Staphylococcus aureus</i>
92	l-stpC_1_1	<i>Staphylococcus aureus</i>
93	l-fnbA_1_1	<i>Staphylococcus aureus</i>
94	l-spa_1_1	<i>Staphylococcus aureus</i>
95	l-aroE_1_1	<i>Staphylococcus aureus</i>
96	l-aroF_1_1	<i>Staphylococcus aureus</i>
97	l-aroG_1_1	<i>Staphylococcus aureus</i>
98	l-asp23_1_1	<i>Staphylococcus aureus</i>
99	l-atl_1_1	<i>Staphylococcus aureus</i>
100	bsaE_1_1	<i>Staphylococcus aureus</i>
101	bsaG_1_1	<i>Staphylococcus aureus</i>
102	cap5h_1_1	<i>Staphylococcus aureus</i>
103	cap5i_1_1	<i>Staphylococcus aureus</i>
104	cap5j_1_1	<i>Staphylococcus aureus</i>
105	cap5k_1_1	<i>Staphylococcus aureus</i>
106	cap8H_1_1	<i>Staphylococcus aureus</i>
107	cap8I_1_1	<i>Staphylococcus aureus</i>
108	cap8J_1_1	<i>Staphylococcus aureus</i>
109	cap8K_1_1	<i>Staphylococcus aureus</i>
110	l-hld_1_1	<i>Staphylococcus aureus</i>
111	l-hysA_1_1	<i>Staphylococcus aureus</i>
112	l-IgGbg_1_1	<i>Staphylococcus aureus</i>
113	EDIN_1_1	<i>Staphylococcus aureus</i>
114	eta_1_1	<i>Staphylococcus aureus</i>
115	etb_1_1	<i>Staphylococcus aureus</i>

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Template source
116	hglA_1_1	<i>Staphylococcus aureus</i>
117	hglA_2_1	<i>Staphylococcus aureus</i>
118	hglB_1_1	<i>Staphylococcus aureus</i>
119	hglC_2_1	<i>Staphylococcus aureus</i>
120	hla_1_1	<i>Staphylococcus aureus</i>
121	hlb_1_2	<i>Staphylococcus aureus</i>
122	lukF_1_1	<i>Staphylococcus aureus</i>
123	lukS_1_1	<i>Staphylococcus aureus</i>
124	lukS_2_1	<i>Staphylococcus aureus</i>
125	NAG_1_1	<i>Staphylococcus aureus</i>
126	sak_1_1	<i>Staphylococcus aureus</i>
127	sea_1_1	<i>Staphylococcus aureus</i>
128	seb_1_1	<i>Staphylococcus aureus</i>
129	sec1_1_1	<i>Staphylococcus aureus</i>
130	seg_1_1	<i>Staphylococcus aureus</i>
131	seh_1_1	<i>Staphylococcus aureus</i>
132	sel_1_1	<i>Staphylococcus aureus</i>
133	set 15_1_1	<i>Staphylococcus aureus</i>
134	set6_1_1	<i>Staphylococcus aureus</i>
135	set7_1_1	<i>Staphylococcus aureus</i>
136	set8_1_1	<i>Staphylococcus aureus</i>
137	sprV8_1_1	<i>Staphylococcus aureus</i>
138	tst_1_1	<i>Staphylococcus aureus</i>
139	l-sdrC_1_1	<i>Staphylococcus aureus</i>
140	l-sdrD_1_1	<i>Staphylococcus aureus</i>
141	l-sdrE_1_1	<i>Staphylococcus aureus</i>
142	b1169_1_1	<i>Escherichia coli</i>
143	envZ_1_1	<i>Escherichia coli</i>
144	fliCb_1_1	<i>Escherichia coli</i>
145	nfrB_1_1	<i>Escherichia coli</i>
146	nlpA_1_1	<i>Escherichia coli</i>
147	pilAe_1_1	<i>Escherichia coli</i>
148	yacH_1_1	<i>Escherichia coli</i>
149	yagX_1_1	<i>Escherichia coli</i>
150	ycdS_1_1	<i>Escherichia coli</i>
151	yciQ_1_1	<i>Escherichia coli</i>
152	ym cA_1_1	<i>Escherichia coli</i>
153	b1202_1_1	<i>Escherichia coli</i>

EP 1 770 171 A1

(continued)

SEQ ID NO	Probe name	Template source
154	eae_1_1	<i>Escherichia coli</i>
155	eltB_1_1	<i>Escherichia coli</i>
156	escR_1_1	<i>Escherichia coli</i>
157	escT_1_1	<i>Escherichia coli</i>
158	escU_1_1	<i>Escherichia coli</i>
159	espB_1_1	<i>Escherichia coli</i>
160	fes_1_1	<i>Escherichia coli</i>
161	fes_2_1	<i>Escherichia coli</i>
162	fteA_1_1	<i>Escherichia coli</i>
163	hlyA_1_1	<i>Escherichia coli</i>
164	hlyB_1_1	<i>Escherichia coli</i>
165	iucA_1_1	<i>Escherichia coli</i>
166	iucB_1_1	<i>Escherichia coli</i>
167	iucC_1_1	<i>Escherichia coli</i>
168	papG_1_1	<i>Escherichia coli</i>
169	rfbE_1_1	<i>Escherichia coli</i>
170	shuA_1_1	<i>Escherichia coli</i>
171	SLTII_1_1	<i>Escherichia coli</i>
172	toxA- LTPA_1_1	<i>Escherichia coli</i>
173	VT2vaB_1_1	<i>Escherichia coli</i>
174	ardeSE0106_1_1	<i>Staphylococcus epidermidis</i>
175	ardeSE0107_1_1	<i>Staphylococcus epidermidis</i>
176	aroiSE0105_1_1	<i>Staphylococcus epidermidis</i>
177	atlE_1_1	<i>Staphylococcus epidermidis</i>
178	agrB_1_1	<i>Staphylococcus epidermidis</i>
179	agrC_1_1	<i>Staphylococcus epidermidis</i>
180	alphSE1368_1_1	<i>Staphylococcus epidermidis</i>
181	gad_1_1	<i>Staphylococcus epidermidis</i>
182	glucSE1191_1_1	<i>Staphylococcus epidermidis</i>
183	hsp10_1_1	<i>Staphylococcus epidermidis</i>
184	icaA_1_1	<i>Staphylococcus epidermidis</i>
185	icaB_1_1	<i>Staphylococcus epidermidis</i>
186	mvaSSepid_1_1	<i>Staphylococcus epidermidis</i>
187	nitreSE1972_1_1	<i>Staphylococcus epidermidis</i>
188	nitreSE1974_1_1	<i>Staphylococcus epidermidis</i>
189	nitreSE1975_1_1	<i>Staphylococcus epidermidis</i>
190	oiamtSE1209_1_1	<i>Staphylococcus epidermidis</i>
191	ORF1Sepid_1_1	<i>Staphylococcus epidermidis</i>

EP 1 770 171 A1

(continued)

SEQ ID NO	Probe name	Template source
192	ORF3bSepid_1_1	<i>Staphylococcus epidermidis</i>
193	qacR_1_1	<i>Staphylococcus epidermidis</i>
194	sin_1_1	<i>Staphylococcus epidermidis</i>
195	ureSE1861_1_1	<i>Staphylococcus epidermidis</i>
196	ureSE1863_1_1	<i>Staphylococcus epidermidis</i>
197	ureSE1864_1_1	<i>Staphylococcus epidermidis</i>
198	ureSE1865_1_1	<i>Staphylococcus epidermidis</i>
199	ureSE1867_1_1	<i>Staphylococcus epidermidis</i>
200	gcaD_1_1	<i>Staphylococcus epidermidis</i>
201	hld_orf5_1_1	<i>Staphylococcus epidermidis</i>
202	icaC_1_1	<i>Staphylococcus epidermidis</i>
203	icaD_1_1	<i>Staphylococcus epidermidis</i>
204	icaR_1_1	<i>Staphylococcus epidermidis</i>
205	psm_betaiand2_1_1	<i>Staphylococcus epidermidis</i>
206	purR_1_1	<i>Staphylococcus epidermidis</i>
207	spoVG_1_1	<i>Staphylococcus epidermidis</i>
208	yabJ_1_1	<i>Staphylococcus epidermidis</i>
209	folQShaemolyt_1_1	<i>Staphylococcus haemolyticus</i>
210	mvaCShaemolyticus_1_1	<i>Staphylococcus haemolyticus</i>
211	mvaDShaemolyt_1_1	<i>Staphylococcus haemolyticus</i>
212	mvaK1Shaemolyticus_1_1	<i>Staphylococcus haemolyticus</i>
213	mvaSShaemolyticus_1_1	<i>Staphylococcus haemolyticus</i>
214	RNApolsigm_1_1	<i>Staphylococcus haemolyticus</i>
215	lipShaemolyt_1_1	<i>Staphylococcus haemolyticus</i>
216	agrB2Stalugd_1_1	<i>Staphylococcus lugdunensis</i>
217	agrC2Stalugd_1_1	<i>Staphylococcus lugdunensis</i>
218	agrCStalugd_1_1	<i>Staphylococcus lugdunensis</i>
219	slamStalugd_1_1	<i>Staphylococcus lugdunensis</i>
220	fblStalugd_1_1	<i>Staphylococcus lugdunensis</i>
221	slushABCStalugd_1_1	<i>Staphylococcus lugdunensis</i>
222	RNApolsigmSsapro_1_1	<i>Staphylococcus saprophyticus</i>
223	RNApolsigmSsapro_1_2	<i>Staphylococcus saprophyticus</i>
224	msrw1Stwar_1_1	<i>Staphylococcus warneri</i>
225	nukMStwar_1_1	<i>Staphylococcus warneri</i>
226	proDStwar_1_1	<i>Staphylococcus warneri</i>
227	proMStwar_1_1	<i>Staphylococcus warneri</i>
228	sigrpoStwar_1_1	<i>Staphylococcus warneri</i>
229	tnpStwar_1_1	<i>Staphylococcus warneri</i>

EP 1 770 171 A1

(continued)

SEQ ID NO	Probe name	Template source
230	gehASTwar_1_1	<i>Staphylococcus warneri</i>
231	ARG56_1_1	<i>Candida albicans</i>
232	ASL43f_1_1	<i>Candida albicans</i>
233	BGL2_1_1	<i>Candida albicans</i>
234	CACHS3_1_1	<i>Candida albicans</i>
235	CCT8_1_1	<i>Candida albicans</i>
236	CDC37_1_1	<i>Candida albicans</i>
237	CEF3_1_1	<i>Candida albicans</i>
238	CHS1_1_1	<i>Candida albicans</i>
239	CHS2_1_1	<i>Candida albicans</i>
240	CHS4_1_1	<i>Candida albicans</i>
241	CHS5_1_1	<i>Candida albicans</i>
242	CHT1_1_1	<i>Candida albicans</i>
243	CHT2_1_1	<i>Candida albicans</i>
244	CHT4_1_1	<i>Candida albicans</i>
245	CSA1_1_1 1	<i>Candida albicans</i>
246	5triphosphatase_1_1	<i>Candida albicans</i>
247	AAF1_1_1 1	<i>Candida albicans</i>
248	ADH1_1_1	<i>Candida albicans</i>
249	ALS1_1_1	<i>Candida albicans</i>
250	ALS7_1_1	<i>Candida albicans</i>
251	EDT1_1_1	<i>Candida albicans</i>
252	ELF_1_1	<i>Candida albicans</i>
253	ESS1_1_1	<i>Candida albicans</i>
254	FAL1_1_1	<i>Candida albicans</i>
255	GAP1_1_1	<i>Candida albicans</i>
256	GNA1_1_1	<i>Candida albicans</i>
257	GSC1_1_1	<i>Candida albicans</i>
258	GSL1_1_1	<i>Candida albicans</i>
259	HIS1_1_1	<i>Candida albicans</i>
260	HTS1_1_1	<i>Candida albicans</i>
261	HWP1_2_1	<i>Candida albicans</i>
262	HYR1_1_1	<i>Candida albicans</i>
263	NT1a_1_1	<i>Candida albicans</i>
264	KRE15f_1_1	<i>Candida albicans</i>
265	KRE6_1_1	<i>Candida albicans</i>
266	KRE9_1_1	<i>Candida albicans</i>
267	MIG1_1_1	<i>Candida albicans</i>

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Template source
268	MLS1_1_1	<i>Candida albicans</i>
269	MP65_1_1	<i>Candida albicans</i>
270	NDE1_1_1	<i>Candida albicans</i>
271	PFK2_1_1	<i>Candida albicans</i>
272	PHR1_1_1	<i>Candida albicans</i>
273	PHR2_1_1	<i>Candida albicans</i>
274	PHR3_1_1	<i>Candida albicans</i>
275	PRA1_1_1	<i>Candida albicans</i>
276	PRS1_1_1	<i>Candida albicans</i>
277	RBT1_1_1	<i>Candida albicans</i>
278	RBT4_1_1	<i>Candida albicans</i>
279	RHO1_1_1	<i>Candida albicans</i>
280	RNR1_1_1	<i>Candida albicans</i>
281	RPB7_1_1	<i>Candida albicans</i>
282	RPL13_1_1	<i>Candida albicans</i>
283	RVS167_1_1	<i>Candida albicans</i>
284	SHA3_1_1	<i>Candida albicans</i>
285	SKN1_1_1	<i>Candida albicans</i>
286	SRB1_1_1	<i>Candida albicans</i>
287	TCA1_1_1	<i>Candida albicans</i>
288	TRP1_1_1	<i>Candida albicans</i>
289	YAE1_1_1	<i>Candida albicans</i>
290	YRB1_1_1	<i>Candida albicans</i>
291	YST1exon2_1_1	<i>Candida albicans</i>
292	CCN1_1_1	<i>Candida albicans</i>
293	CDC28_1_1	<i>Candida albicans</i>
294	CLN2_1_1	<i>Candida albicans</i>
295	CPH1_1_1	<i>Candida albicans</i>
296	CYB1_1_1	<i>Candida albicans</i>
297	EFG1_1_1	<i>Candida albicans</i>
298	MNT1_1_1	<i>Candida albicans</i>
299	RBF1_1_1	<i>Candida albicans</i>
300	RBF1_2_1	<i>Candida albicans</i>
301	RIM101_1_1	<i>Candida albicans</i>
302	RIM8_1_1	<i>Candida albicans</i>
303	SEC14_1_1	<i>Candida albicans</i>
304	SEC4_1_1	<i>Candida albicans</i>
305	TUP1_1_1	<i>Candida albicans</i>

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Template source
306	YPT1_1_1	<i>Candida albicans</i>
307	ZNF1CZF1_2_1	<i>Candida albicans</i>
308	arcA_1_1	<i>Enterococcus faecalis</i>
309	arcC_1_1	<i>Enterococcus faecalis</i>
310	bkdA_1_1	<i>Enterococcus faecalis</i>
311	cad_1_1	<i>Enterococcus faecalis</i>
312	camE1_1_1	<i>Enterococcus faecalis</i>
313	esrA_1_1	<i>Enterococcus faecalis</i>
314	dacA_1_1	<i>Enterococcus faecalis</i>
315	dfr_1_1	<i>Enterococcus faecalis</i>
316	dhoD1a_1_1	<i>Enterococcus faecalis</i>
317	ABC-eltA_1_1	<i>Enterococcus faecalis</i>
318	agrBfs_1_1	<i>Enterococcus faecalis</i>
319	agrCfs_1_1	<i>Enterococcus faecalis</i>
320	dnaE_1_1	<i>Enterococcus faecalis</i>
321	ebsA_1_1	<i>Enterococcus faecalis</i>
322	ebsB_1_1	<i>Enterococcus faecalis</i>
323	eep_1_1	<i>Enterococcus faecalis</i>
324	efaR_1_1	<i>Enterococcus faecalis</i>
325	gls24_glsB_1_1	<i>Enterococcus faecalis</i>
326	gph_1_1	<i>Enterococcus faecalis</i>
327	gyrAEf_1_1	<i>Enterococcus faecalis</i>
328	metEf_1_1	<i>Enterococcus faecalis</i>
329	mntHCb2_1_1	<i>Enterococcus faecalis</i>
330	mob2_1_1	<i>Enterococcus faecalis</i>
331	mvaD_1_1	<i>Enterococcus faecalis</i>
332	mvaE_1_1	<i>Enterococcus faecalis</i>
333	parC_1_1	<i>Enterococcus faecalis</i>
334	pcfG_1_1	<i>Enterococcus faecalis</i>
335	phoZ_1_1	<i>Enterococcus faecalis</i>
336	polC_1_1	<i>Enterococcus faecalis</i>
337	ptb_1_1	<i>Enterococcus faecalis</i>
338	reeS1_1_1	<i>Enterococcus faecalis</i>
339	rpoN_1_1	<i>Enterococcus faecalis</i>
340	tms_1_1	<i>Enterococcus faecalis</i>
341	tyrDC_1_1	<i>Enterococcus faecalis</i>
342	tyrS_1_1	<i>Enterococcus faecalis</i>
343	asa1_1_1	<i>Enterococcus faecalis</i>

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Template source
344	asp1_1_1	<i>Enterococcus faecalis</i>
345	cgh_1_1	<i>Enterococcus faecalis</i>
346	cylA_1_1	<i>Enterococcus faecalis</i>
347	cylB_1_1	<i>Enterococcus faecalis</i>
348	cylL_1_1	<i>Enterococcus faecalis</i>
349	cylL_cylS_1_1	<i>Enterococcus faecalis</i>
350	cylM_1_1	<i>Enterococcus faecalis</i>
351	ace_1_1	<i>Enterococcus faecalis</i>
352	ef00108_1_1	<i>Enterococcus faecalis</i>
353	ef00109_1_1	<i>Enterococcus faecalis</i>
354	ef0011_1_1	<i>Enterococcus faecalis</i>
355	ef00113_1_1	<i>Enterococcus faecalis</i>
356	ef0012_1_1	<i>Enterococcus faecalis</i>
357	ef0022_1_1	<i>Enterococcus faecalis</i>
358	ef0031_1_1	<i>Enterococcus faecalis</i>
359	ef0032_1_1	<i>Enterococcus faecalis</i>
360	ef0040_1_1	<i>Enterococcus faecalis</i>
361	ef0058_1_1	<i>Enterococcus faecalis</i>
362	enIA_1_1	<i>Enterococcus faecalis</i>
363	esa_1_1	<i>Enterococcus faecalis</i>
364	esp_1_1	<i>Enterococcus faecalis</i>
365	gelE_1_1	<i>Enterococcus faecalis</i>
366	groEL_1_1	<i>Enterococcus faecalis</i>
367	groES_1_1	<i>Enterococcus faecalis</i>
368	rt1_1_1	<i>Enterococcus faecalis</i>
369	sala_1_1	<i>Enterococcus faecalis</i>
370	salb_1_1	<i>Enterococcus faecalis</i>
371	sea1_1_1	<i>Enterococcus faecalis</i>
372	sep1_1_1	<i>Enterococcus faecalis</i>
373	vicK_1_1	<i>Enterococcus faecalis</i>
374	yycH_1_1	<i>Enterococcus faecalis</i>
375	yycI_1_1	<i>Enterococcus faecalis</i>
376	yycJ_1_1	<i>Enterococcus faecalis</i>
377	bglB_1_1	<i>Enterococcus faecium</i>
378	bglR_1_1	<i>Enterococcus faecium</i>
379	bglS_1_1	<i>Enterococcus faecium</i>
380	efmA_1_1	<i>Enterococcus faecium</i>
381	efmB_1_1	<i>Enterococcus faecium</i>

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Template source
382	efmC_1_1	<i>Enterococcus faecium</i>
383	mreC_1_1	<i>Enterococcus faecium</i>
384	mreD_1_1	<i>Enterococcus faecium</i>
385	mvaDEfaecium_1_1	<i>Enterococcus faecium</i>
386	mvaEEfaecium_1_1	<i>Enterococcus faecium</i>
387	mvaK1 Efaecium_1_1	<i>Enterococcus faecium</i>
388	mvaK2Efaecium_1_1	<i>Enterococcus faecium</i>
389	mvaSEfaecium_1_1	<i>Enterococcus faecium</i>
390	orf3_4Efaeciumb_1_1	<i>Enterococcus faecium</i>
391	orf6_7Efaecium_1_1	<i>Enterococcus faecium</i>
392	orf7_8Efaecium_1_1	<i>Enterococcus faecium</i>
393	orf9_10Efaecium_1_1	<i>Enterococcus faecium</i>
394	entA_entl_1_1	<i>Enterococcus faecium</i>
395	entD_1_1	<i>Enterococcus faecium</i>
396	entR_1_1	<i>Enterococcus faecium</i>
397	oep_1_1	<i>Enterococcus faecium</i>
398	sagA_1_2	<i>Enterococcus faecium</i>
399	atsA_1_1	<i>Klebsiella pneumoniae</i>
400	atsB_1_1	<i>Klebsiella pneumoniae</i>
401	budC_1_1	<i>Klebsiella pneumoniae</i>
402	citA_1_1	<i>Klebsiella pneumoniae</i>
403	citW_1_1	<i>Klebsiella pneumoniae</i>
404	citX_1_1	<i>Klebsiella pneumoniae</i>
405	dalD_1_1	<i>Klebsiella pneumoniae</i>
406	dalK_1_1	<i>Klebsiella pneumoniae</i>
407	dalT_1_1	<i>Klebsiella pneumoniae</i>
408	acoA_1_1	<i>Klebsiella pneumoniae</i>
409	acoB_1_1	<i>Klebsiella pneumoniae</i>
410	acoC_1_1	<i>Klebsiella pneumoniae</i>
411	ahIK_1_1	<i>Klebsiella pneumoniae</i>
412	fimK_1_1	<i>Klebsiella pneumoniae</i>
413	glfKPN2_1_1	<i>Klebsiella pneumoniae</i>
414	ltrA_1_1	<i>Klebsiella pneumoniae</i>
415	mdcC_1_1	<i>Klebsiella pneumoniae</i>
416	mdcF_1_1	<i>Klebsiella pneumoniae</i>
417	mdcH_1_1	<i>Klebsiella pneumoniae</i>
418	mrkA_1_1	<i>Klebsiella pneumoniae</i>
419	mtrK_1_1	<i>Klebsiella pneumoniae</i>

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Template source
420	nifF_1_1	<i>Klebsiella pneumoniae</i>
421	nifK_1_1	<i>Klebsiella pneumoniae</i>
422	nifN_1_1	<i>Klebsiella pneumoniae</i>
423	tyrP_1_1	<i>Klebsiella pneumoniae</i>
424	ureA_1_1	<i>Klebsiella pneumoniae</i>
425	wbbO_1_1	<i>Klebsiella pneumoniae</i>
426	wza_1_1	<i>Klebsiella pneumoniae</i>
427	wzb_1_1	<i>Klebsiella pneumoniae</i>
428	wzm KPN2_1_1	<i>Klebsiella pneumoniae</i>
429	wztKPN2_1_1	<i>Klebsiella pneumoniae</i>
430	yojH_1_1	<i>Klebsiella pneumoniae</i>
431	liac_1_1	<i>Klebsiella pneumoniae</i>
432	cim_1_1	<i>Klebsiella pneumoniae</i>
433	aldA_1_1	<i>Klebsiella pneumoniae</i>
434	aldA_2_1	<i>Klebsiella pneumoniae</i>
435	hemly_1_1	<i>Klebsiella pneumoniae</i>
436	pSL017_1_1	<i>Klebsiella pneumoniae</i>
437	pSL020_1_1	<i>Klebsiella pneumoniae</i>
438	rcsA_1_1	<i>Klebsiella pneumoniae</i>
439	rmlC_1_1	<i>Klebsiella pneumoniae</i>
440	rmID_1_1	<i>Klebsiella pneumoniae</i>
441	waaG_1_1	<i>Klebsiella pneumoniae</i>
442	wbbD_1_1	<i>Klebsiella pneumoniae</i>
443	wbbM_1_1	<i>Klebsiella pneumoniae</i>
444	wbbN_1_1	<i>Klebsiella pneumoniae</i>
445	wbdA_1_1	<i>Klebsiella pneumoniae</i>
446	wbdC_1_1	<i>Klebsiella pneumoniae</i>
447	wztKpn_1_1	<i>Klebsiella pneumoniae</i>
448	yibD_1_1	<i>Klebsiella pneumoniae</i>
449	cymA_1_1	<i>Klebsiella oxytoca</i>
450	cymD_1_1	<i>Klebsiella oxytoca</i>
451	cymE_1_1	<i>Klebsiella oxytoca</i>
452	cymH_1_1	<i>Klebsiella oxytoca</i>
453	cymI_1_1	<i>Klebsiella oxytoca</i>
454	cymd_1_1	<i>Klebsiella oxytoca</i>
455	ddrA_1_1	<i>Klebsiella oxytoca</i>
456	fdt-1_1_1	<i>Klebsiella oxytoca</i>
457	fdt-2_1_1	<i>Klebsiella oxytoca</i>

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Template source
458	fdt-3_1_1	<i>Klebsiella oxytoca</i>
459	gatY_1_1	<i>Klebsiella oxytoca</i>
460	hydH_1_1	<i>Klebsiella oxytoca</i>
461	masA_1_1	<i>Klebsiella oxytoca</i>
462	nasA_1_1	<i>Klebsiella oxytoca</i>
463	nasE_1_1	<i>Klebsiella oxytoca</i>
464	nasF_1_1	<i>Klebsiella oxytoca</i>
465	pehX_1_1	<i>Klebsiella oxytoca</i>
466	pelX_1_1	<i>Klebsiella oxytoca</i>
467	tagH_1_1	<i>Klebsiella oxytoca</i>
468	tagK_1_1	<i>Klebsiella oxytoca</i>
469	tagT_1_1	<i>Klebsiella oxytoca</i>
470	glpR_1_1	<i>Pseudomonas aeruginosa</i>
471	lasRb_1_1	<i>Pseudomonas aeruginosa</i>
472	OrfX_1_1	<i>Pseudomonas aeruginosa</i>
473	pa0260_1_1	<i>Pseudomonas aeruginosa</i>
474	pa0572_1_1	<i>Pseudomonas aeruginosa</i>
475	pa0625_1_1	<i>Pseudomonas aeruginosa</i>
476	pa0636_1_1	<i>Pseudomonas aeruginosa</i>
477	pa1046_1_1	<i>Pseudomonas aeruginosa</i>
478	pa1069_1_1	<i>Pseudomonas aeruginosa</i>
479	pa1846_1_1	<i>Pseudomonas aeruginosa</i>
480	pa3866_1_1	<i>Pseudomonas aeruginosa</i>
481	pa4082_1_1	<i>Pseudomonas aeruginosa</i>
482	pilAp_1_1	<i>Pseudomonas aeruginosa</i>
483	PilAp2_1_1	<i>Pseudomonas aeruginosa</i>
484	pilC_1_1	<i>Pseudomonas aeruginosa</i>
485	PstP_1_1	<i>Pseudomonas aeruginosa</i>
486	purK_1_1	<i>Pseudomonas aeruginosa</i>
487	uvrDII_1_1	<i>Pseudomonas aeruginosa</i>
488	vsml_1_1	<i>Pseudomonas aeruginosa</i>
489	vsm R_1_2	<i>Pseudomonas aeruginosa</i>
490	xcpX_1_1	<i>Pseudomonas aeruginosa</i>
491	aprA_1_1	<i>Pseudomonas aeruginosa</i>
492	aprE_1_1	<i>Pseudomonas aeruginosa</i>
493	ctx_1_2	<i>Pseudomonas aeruginosa</i>
494	algB_1_1	<i>Pseudomonas aeruginosa</i>
495	algN_1_1	<i>Pseudomonas aeruginosa</i>

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Template source
496	algR_1_1	<i>Pseudomonas aeruginosa</i>
497	ExoS_1_1	<i>Pseudomonas aeruginosa</i>
498	fpvA_1_1	<i>Pseudomonas aeruginosa</i>
499	lasRa_1_1	<i>Pseudomonas aeruginosa</i>
500	lipA_1_1	<i>Pseudomonas aeruginosa</i>
501	lipH_1_1	<i>Pseudomonas aeruginosa</i>
502	Orf159_1_2	<i>Pseudomonas aeruginosa</i>
503	Orf252_1_1	<i>Pseudomonas aeruginosa</i>
504	pchG_1_1	<i>Pseudomonas aeruginosa</i>
505	PhzA_1_1	<i>Pseudomonas aeruginosa</i>
506	PhzB_1_1	<i>Pseudomonas aeruginosa</i>
507	PLC_1_1	<i>Pseudomonas aeruginosa</i>
508	plcN_1_1	<i>Pseudomonas aeruginosa</i>
509	plcR_1_1	<i>Pseudomonas aeruginosa</i>
510	pvdD_1_1	<i>Pseudomonas aeruginosa</i>
511	pvdF_1_2	<i>Pseudomonas aeruginosa</i>
512	pyocinS1_1_1	<i>Pseudomonas aeruginosa</i>
513	pyocinS1im_1_1	<i>Pseudomonas aeruginosa</i>
514	pyocinS2_1_1	<i>Pseudomonas aeruginosa</i>
515	pys2_1_1	<i>Pseudomonas aeruginosa</i>
516	pys2_2_1	<i>Pseudomonas aeruginosa</i>
517	rbf303_1_1	<i>Pseudomonas aeruginosa</i>
518	rhlA_1_1	<i>Pseudomonas aeruginosa</i>
519	rhlB_1_1	<i>Pseudomonas aeruginosa</i>
520	rhlR_1_1	<i>Pseudomonas aeruginosa</i>
521	TnAP41_1_2	<i>Pseudomonas aeruginosa</i>
522	toxA_1_1	<i>Pseudomonas aeruginosa</i>
523	cap1EStrpneu_1_1	<i>Streptococcus pneumoniae</i>
524	cap1FStrpneu_1_1	<i>Streptococcus pneumoniae</i>
525	cap1GStrpneu_1_1	<i>Streptococcus pneumoniae</i>
526	cap3AStrpneu_1_1	<i>Streptococcus pneumoniae</i>
527	cap3BStrpneu_1_1	<i>Streptococcus pneumoniae</i>
528	celAStrpneu_1_1	<i>Streptococcus pneumoniae</i>
529	celBStrpneu_1_1	<i>Streptococcus pneumoniae</i>
530	cglAStrpneu_1_1	<i>Streptococcus pneumoniae</i>
531	cglBStrpneu_1_1	<i>Streptococcus pneumoniae</i>
532	cglCStrpneu_1_1	<i>Streptococcus pneumoniae</i>
533	cglDStrpneu_1_1	<i>Streptococcus pneumoniae</i>

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Template source
534	cinA_1_1	<i>Streptococcus pneumoniae</i>
535	cps14EStrpneum_1_1	<i>Streptococcus pneumoniae</i>
536	cps14FStrpneum_1_1	<i>Streptococcus pneumoniae</i>
537	cps14GStrpneum_1_1	<i>Streptococcus pneumoniae</i>
538	cps14HStrpneum_1_1	<i>Streptococcus pneumoniae</i>
539	cps19aHStrpneum_1_1	<i>Streptococcus pneumoniae</i>
540	cps19aIStrpneum_1_1	<i>Streptococcus pneumoniae</i>
541	cps19aKStrpneum_1_1	<i>Streptococcus pneumoniae</i>
542	cps19fGStrpneum_1_1	<i>Streptococcus pneumoniae</i>
543	cps23fGStrpneum_1_1	<i>Streptococcus pneumoniae</i>
544	dexB_1_1	<i>Streptococcus pneumoniae</i>
545	dinF_1_1	<i>Streptococcus pneumoniae</i>
546	1760Strpneu_1_1	<i>Streptococcus pneumoniae</i>
547	acyPStrpneu_1_1	<i>Streptococcus pneumoniae</i>
548	endAStrpneu_1_1	<i>Streptococcus pneumoniae</i>
549	exoAStrpneu_1_1	<i>Streptococcus pneumoniae</i>
550	exp72_1_1	<i>Streptococcus pneumoniae</i>
551	fnlAStrpneu_1_1	<i>Streptococcus pneumoniae</i>
552	fnlBStrpneu_1_1	<i>Streptococcus pneumoniae</i>
553	fnlCStrpneu_1_1	<i>Streptococcus pneumoniae</i>
554	gct18Strpneum_1_1	<i>Streptococcus pneumoniae</i>
555	hexB1_1_1	<i>Streptococcus pneumoniae</i>
556	hftsHstrpneu_1_1	<i>Streptococcus pneumoniae</i>
557	immunofrag 1 Strpneu_1_1	<i>Streptococcus pneumoniae</i>
558	immunofrag2Strpneu_2_1	<i>Streptococcus pneumoniae</i>
559	immunofrag3Strpneu_2_1	<i>Streptococcus pneumoniae</i>
560	kdtBStrpneu_1_1	<i>Streptococcus pneumoniae</i>
561	lysAStrpneu_1_1	<i>Streptococcus pneumoniae</i>
562	pcpBStrpneu_1_1	<i>Streptococcus pneumoniae</i>
563	pflCStrpneu_1_1	<i>Streptococcus pneumoniae</i>
564	plpA_1_1	<i>Streptococcus pneumoniae</i>
565	prtA1Strpneu_1_1	<i>Streptococcus pneumoniae</i>
566	pspC1Strpneu_1_1	<i>Streptococcus pneumoniae</i>
567	pspC2_1_1	<i>Streptococcus pneumoniae</i>
568	purRStrpneu_1_1	<i>Streptococcus pneumoniae</i>
569	pyrDAStrpneum_1_1	<i>Streptococcus pneumoniae</i>
570	SP0828Strpneu_1_1	<i>Streptococcus pneumoniae</i>
571	SP0830Strpneu_1_1	<i>Streptococcus pneumoniae</i>

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Template source
572	SP0833Strpneu_1_1	<i>Streptococcus pneumoniae</i>
573	SP0837_38Strpneu_1_1	<i>Streptococcus pneumoniae</i>
574	SP0839Strpneu_1_1	<i>Streptococcus pneumoniae</i>
575	ugdStrpneu_1_1	<i>Streptococcus pneumoniae</i>
576	uncC_1_1	<i>Streptococcus pneumoniae</i>
577	vicXStrpneu_1_1	<i>Streptococcus pneumoniae</i>
578	wchA6bStrpneu_1_1	<i>Streptococcus pneumoniae</i>
579	wci4Strpneu_1_1	<i>Streptococcus pneumoniae</i>
580	wciK4Strpneu_1_1	<i>Streptococcus pneumoniae</i>
581	wciL4Strpneu_1_1	<i>Streptococcus pneumoniae</i>
582	wciN6bStrpneu_1_1	<i>Streptococcus pneumoniae</i>
583	wciO6bStrpneu_1_1	<i>Streptococcus pneumoniae</i>
584	wciP6bStrpneu_1_1	<i>Streptococcus pneumoniae</i>
585	wciY18Strpneu_1_1	<i>Streptococcus pneumoniae</i>
586	wzdbStrpneu_1_1	<i>Streptococcus pneumoniae</i>
587	wze6bStrpneu_1_1	<i>Streptococcus pneumoniae</i>
588	wzy18Strpneu_1_1	<i>Streptococcus pneumoniae</i>
589	wzy4Strpneu_1_1	<i>Streptococcus pneumoniae</i>
590	wzy6bStrpneu_1_1	<i>Streptococcus pneumoniae</i>
591	xpt_1_1	<i>Streptococcus pneumoniae</i>
592	igaStrpneu_1_1	<i>Streptococcus pneumoniae</i>
593	lytA_1_1	<i>Streptococcus pneumoniae</i>
594	nanA_1_1	<i>Streptococcus pneumoniae</i>
595	nanBStrpneu_1_1	<i>Streptococcus pneumoniae</i>
596	pcpCStrpneu_1_1	<i>Streptococcus pneumoniae</i>
597	ply_1_1	<i>Streptococcus pneumoniae</i>
598	prtAStrpneu_1_1	<i>Streptococcus pneumoniae</i>
599	pspA_1_2	<i>Streptococcus pneumoniae</i>
600	SP0834Strpneu_1_1	<i>Streptococcus pneumoniae</i>
601	SP0834Strpneu_1_2	<i>Streptococcus pneumoniae</i>
602	sphtraStrpneu_1_1	<i>Streptococcus pneumoniae</i>
603	wciJStrpneu_1_1	<i>Streptococcus pneumoniae</i>
604	wziyStrpneu_1_1	<i>Streptococcus pneumoniae</i>
605	wzxStrpneu_1_1	<i>Streptococcus pneumoniae</i>
606	cpsA1Strgal_1_1	<i>Streptococcus agalactiae</i>
607	cpsB1 Strgal_1_1	<i>Streptococcus agalactiae</i>
608	cpsC1Strgal_1_1	<i>Streptococcus agalactiae</i>
609	cpsD1Strgal_1_1	<i>Streptococcus agalactiae</i>

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Template source
610	cpsE1Strgal_1_1	<i>Streptococcus agalactiae</i>
611	cpsG1Strgal_1_1	<i>Streptococcus agalactiae</i>
612	cpsI1Strgal_1_1	<i>Streptococcus agalactiae</i>
613	cpsJ1Strgal_1_1	<i>Streptococcus agalactiae</i>
614	cpsK1Strgal_1_1	<i>Streptococcus agalactiae</i>
615	cpsM1Strgal_1_1	<i>Streptococcus agalactiae</i>
616	cpsY1Strgal_1_1	<i>Streptococcus agalactiae</i>
617	cpsY1Strgal_2_1	<i>Streptococcus agalactiae</i>
618	cylB1Straga_1_1	<i>Streptococcus agalactiae</i>
619	cylE1Straga_1_1	<i>Streptococcus agalactiae</i>
620	cylF1Straga_1_1	<i>Streptococcus agalactiae</i>
621	cylH1Straga_1_1	<i>Streptococcus agalactiae</i>
622	cylI1Straga_1_1	<i>Streptococcus agalactiae</i>
623	cylJ1Straga_1_1	<i>Streptococcus agalactiae</i>
624	cylK1Straga_1_1	<i>Streptococcus agalactiae</i>
625	0487Straga_1_1	<i>Streptococcus agalactiae</i>
626	0488Straga_1_1	<i>Streptococcus agalactiae</i>
627	0493Straga_1_1	<i>Streptococcus agalactiae</i>
628	0495Straga_1_1	<i>Streptococcus agalactiae</i>
629	0498Straga_1_1	<i>Streptococcus agalactiae</i>
630	0500Straga_1_1	<i>Streptococcus agalactiae</i>
631	0502Straga_1_1	<i>Streptococcus agalactiae</i>
632	0504Straga_1_1	<i>Streptococcus agalactiae</i>
633	folD1Straga_1_1	<i>Streptococcus agalactiae</i>
634	neuA1Strgal_1_1	<i>Streptococcus agalactiae</i>
635	neuB1Strgal_1_1	<i>Streptococcus agalactiae</i>
636	neuC1Strgal_1_1	<i>Streptococcus agalactiae</i>
637	neuD1Strgal_1_1	<i>Streptococcus agalactiae</i>
638	recN1Straga_1_1	<i>Streptococcus agalactiae</i>
639	ileS1Straga_1_1	<i>Streptococcus agalactiae</i>
640	CAMPfactor_1_1	<i>Streptococcus agalactiae</i>
641	CAMPfactor_2_1	<i>Streptococcus agalactiae</i>
642	0499Straga_1_1	<i>Streptococcus agalactiae</i>
643	hyl1Stragal_1_1	<i>Streptococcus agalactiae</i>
644	lip1Stragal_1_1	<i>Streptococcus agalactiae</i>
645	cycl1Strpyog_1_1	<i>Streptococcus pyogenes</i>
646	fah_rph_hlo_Strpyog_1_1	<i>Streptococcus pyogenes</i>
647	int_1_1	<i>Streptococcus pyogenes</i>

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Template source
648	int315.5_1_1	<i>Streptococcus pyogenes</i>
649	murEStrpyog_1_1	<i>Streptococcus pyogenes</i>
650	oppA_1_1	<i>Streptococcus pyogenes</i>
651	oppCStrpyog_1_1	<i>Streptococcus pyogenes</i>
652	oppD_1_1	<i>Streptococcus pyogenes</i>
653	SPy0382Strpyog_1_1	<i>Streptococcus pyogenes</i>
654	SPy0390Strpyog_1_1	<i>Streptococcus pyogenes</i>
655	SPyM3_1351_1_1	<i>Streptococcus pyogenes</i>
656	vicXStrpyog_1_1	<i>Streptococcus pyogenes</i>
657	DNaseIStrpyog_1_1	<i>Streptococcus pyogenes</i>
658	fba2Strpyog_1_1	<i>Streptococcus pyogenes</i>
659	fhuAStrpyog_1_1	<i>Streptococcus pyogenes</i>
660	fhuBStrpyog_1_1	<i>Streptococcus pyogenes</i>
661	fhuDStrpyog_1_1	<i>Streptococcus pyogenes</i>
662	fhuGStrpyog_1_1	<i>Streptococcus pyogenes</i>
663	hylA_1_1	<i>Streptococcus pyogenes</i>
664	hylP_1_1	<i>Streptococcus pyogenes</i>
665	hylP2_1_1	<i>Streptococcus pyogenes</i>
666	oppB_1_1	<i>Streptococcus pyogenes</i>
667	ropB_1_1	<i>Streptococcus pyogenes</i>
668	scpAStrpyog_1_1	<i>Streptococcus pyogenes</i>
669	sloStrpyog_1_1	<i>Streptococcus pyogenes</i>
670	smez-4Strpyog_1_1	<i>Streptococcus pyogenes</i>
671	sof_1_1	<i>Streptococcus pyogenes</i>
672	sof_2_1	<i>Streptococcus pyogenes</i>
673	speA_1_1	<i>Streptococcus pyogenes</i>
674	speB2Strpyog_1_1	<i>Streptococcus pyogenes</i>
675	speCStrpyog_1_1	<i>Streptococcus pyogenes</i>
676	speJStrpyog_1_1	<i>Streptococcus pyogenes</i>
677	srtBStrpyog_1_1	<i>Streptococcus pyogenes</i>
678	srtCStrpyog_1_1	<i>Streptococcus pyogenes</i>
679	srtEStrpyog_1_1	<i>Streptococcus pyogenes</i>
680	srtFStrpyog_1_1	<i>Streptococcus pyogenes</i>
681	srtGStrpyog_1_1	<i>Streptococcus pyogenes</i>
682	srtIStrpyog_1_1	<i>Streptococcus pyogenes</i>
683	srtKStrpyog_1_1	<i>Streptococcus pyogenes</i>
684	srtRStrpyog_1_1	<i>Streptococcus pyogenes</i>
685	srtTStrpyog_1_1	<i>Streptococcus pyogenes</i>

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Template source
686	vicKStrpyog_1_1	<i>Streptococcus pyogenes</i>
687	573SStprmut_1_1	<i>Streptococcus viridans</i>
688	580SSStprmut_1_1	<i>Streptococcus viridans</i>
689	581_582SSStprmut_1_1	<i>Streptococcus viridans</i>
690	584SSStprmut_1_1	<i>Streptococcus viridans</i>
691	dltAStmut_1_1	<i>Streptococcus viridans</i>
692	dltBStmut_1_1	<i>Streptococcus viridans</i>
693	dltCpx1Stmut_1_1	<i>Streptococcus viridans</i>
694	dltDStmut_1_1	<i>Streptococcus viridans</i>
695	lichStrbov_1_1	<i>Streptococcus viridans</i>
696	lytRStprmut_1_1	<i>Streptococcus viridans</i>
697	lytSSStprmut_1_1	<i>Streptococcus viridans</i>
698	pepQStmut_1_1	<i>Streptococcus viridans</i>
699	pflCStmut_1_1	<i>Streptococcus viridans</i>
700	recNStprmut_1_1	<i>Streptococcus viridans</i>
701	ytqBStmut_1_1	<i>Streptococcus viridans</i>
702	hlyXStmut_1_1	<i>Streptococcus viridans</i>
703	igaStrmitis_1_1	<i>Streptococcus viridans</i>
704	igaStrsanguis_1_1	<i>Streptococcus viridans</i>
705	perMStmut_1_1	<i>Streptococcus viridans</i>
706	atfA_1_1	<i>Proteus mirabilis</i>
707	atfB_1_1	<i>Proteus mirabilis</i>
708	atfC_1_1	<i>Proteus mirabilis</i>
709	ccmPrmi1_1_1	<i>Proteus mirabilis</i>
710	cyaPrmi_1_1	<i>Proteus mirabilis</i>
711	aad_1_1	<i>Proteus mirabilis</i>
712	flfB_1_1	<i>Proteus mirabilis</i>
713	flfD_1_1	<i>Proteus mirabilis</i>
714	flfN_1_1	<i>Proteus mirabilis</i>
715	flhD_1_1	<i>Proteus mirabilis</i>
716	floA_1_1	<i>Proteus mirabilis</i>
717	ftsK_1_1	<i>Proteus mirabilis</i>
718	gstB_1_1	<i>Proteus mirabilis</i>
719	hem CPrmi_1_1	<i>Proteus mirabilis</i>
720	hem DPrmi_1_1	<i>Proteus mirabilis</i>
721	hev_1_1	<i>Proteus mirabilis</i>
722	katA_1_1	<i>Proteus mirabilis</i>
723	lpp1_1_1	<i>Proteus mirabilis</i>

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Template source
724	menE_1_1	<i>Proteus mirabilis</i>
725	mfd_1_1	<i>Proteus mirabilis</i>
726	nrpA_1_1	<i>Proteus mirabilis</i>
727	nrpB_1_1	<i>Proteus mirabilis</i>
728	nrpG_1_1	<i>Proteus mirabilis</i>
729	nrpS_1_1	<i>Proteus mirabilis</i>
730	nrpT_1_1	<i>Proteus mirabilis</i>
731	nrpU_1_1	<i>Proteus mirabilis</i>
732	pat_1_1	<i>Proteus mirabilis</i>
733	pmfA_1_1	<i>Proteus mirabilis</i>
734	pmfC_1_1	<i>Proteus mirabilis</i>
735	pmfE_1_1	<i>Proteus mirabilis</i>
736	ppaA_1_1	<i>Proteus mirabilis</i>
737	rsbA_1_1	<i>Proteus mirabilis</i>
738	rsbC_1_1	<i>Proteus mirabilis</i>
739	speB_1_1	<i>Proteus mirabilis</i>
740	stmA_1_1	<i>Proteus mirabilis</i>
741	stmB_1_1	<i>Proteus mirabilis</i>
742	terA_1_1	<i>Proteus mirabilis</i>
743	terD_1_1	<i>Proteus mirabilis</i>
744	umoA_1_1	<i>Proteus mirabilis</i>
745	umoB_1_1	<i>Proteus mirabilis</i>
746	umoC_1_1	<i>Proteus mirabilis</i>
747	ureR_1_1	<i>Proteus mirabilis</i>
748	xerC_1_1	<i>Proteus mirabilis</i>
749	ygbA_1_1	<i>Proteus mirabilis</i>
750	flaA_1_1	<i>Proteus mirabilis</i>
751	flaD_1_1	<i>Proteus mirabilis</i>
752	fliA_1_1	<i>Proteus mirabilis</i>
753	hpmA_1_1	<i>Proteus mirabilis</i>
754	hpmB_1_1	<i>Proteus mirabilis</i>
755	lpsPrmi_1_1	<i>Proteus mirabilis</i>
756	mrpA_1_1	<i>Proteus mirabilis</i>
757	mrpB_1_1	<i>Proteus mirabilis</i>
758	mrpC_1_1	<i>Proteus mirabilis</i>
759	mrpD_1_1	<i>Proteus mirabilis</i>
760	mrpE_1_1	<i>Proteus mirabilis</i>
761	mrpF_1_1	<i>Proteus mirabilis</i>

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Template source
762	mrpG_1_1	<i>Proteus mirabilis</i>
763	mrpH_1_1	<i>Proteus mirabilis</i>
764	mrpI_1_1	<i>Proteus mirabilis</i>
765	mrpJ_1_1	<i>Proteus mirabilis</i>
766	patA_1_1	<i>Proteus mirabilis</i>
767	putA_1_1	<i>Proteus mirabilis</i>
768	uca_1_1	<i>Proteus mirabilis</i>
769	ureDPmi_1_1	<i>Proteus mirabilis</i>
770	ureEPmi_1_1	<i>Proteus mirabilis</i>
771	ureFPmi_1_1	<i>Proteus mirabilis</i>
772	zapA_1_1	<i>Proteus mirabilis</i>
773	zapB_1_1	<i>Proteus mirabilis</i>
774	zapD_1_1	<i>Proteus mirabilis</i>
775	zapE_1_1	<i>Proteus mirabilis</i>
776	envZPrvu_1_1	<i>Proteus vulgaris</i>
777	frdC_1_1	<i>Proteus vulgaris</i>
778	frdD_1_1	<i>Proteus vulgaris</i>
779	infBPrvu_1_1	<i>Proteus vulgaris</i>
780	lad_1_1	<i>Proteus vulgaris</i>
781	tna2_1_1	<i>Proteus vulgaris</i>
782	end_1_1	<i>Proteus vulgaris</i>
783	pqrA_1_1	<i>Proteus vulgaris</i>
784	urg_1_1	<i>Proteus vulgaris</i>
785	blaIMP-7_1_1	<i>Pseudomonas aeruginosa</i>
786	mecISepid_1_1	<i>Staphylococcus epidermidis</i>
787	blaOXA-10_1_2	<i>Pseudomonas aeruginosa</i>
788	blaB_1_1	<i>Proteus vulgaris</i>
789	ampC_1_1	<i>Klebsiella oxytoca</i>
790	I-blaR_1_1	<i>Staphylococcus aureus</i>
791	blaOXA-32_1_1	<i>Pseudomonas aeruginosa</i>
792	bla- CTX-M-22_1_1	<i>Klebsiella pneumoniae</i>
793	pbp2aStrpneu_1_1	<i>Streptococcus pneumoniae</i>
794	blaSHV-1_1_1	<i>Klebsiella pneumoniae</i>
795	blaOXA-2_1_1	<i>Salmonella typhimurium</i>
796	blaRShaemolyt_1_1	<i>Staphylococcus haemolyticus</i>
797	blaIMP-7_1_2	<i>Pseudomonas aeruginosa</i>
798	I-mecR_1_1	<i>Staphylococcus aureus</i>
799	blaOXY_1_1	<i>Klebsiella oxytoca</i>

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Template source
800	dacCStrpyog_1_1	<i>Streptococcus pyogenes</i>
801	femA_1_1	<i>Staphylococcus aureus</i>
802	mecA_1_1	<i>Staphylococcus aureus</i>
803	blaShaemolyt_1_1	<i>Staphylococcus haemolyticus</i>
804	blavim_1_1	<i>Pseudomonas aeruginosa</i>
805	pbp2b_1_1	<i>Streptococcus pneumoniae</i>
806	pbp2primeSepid_1_1	<i>Staphylococcus epidermidis</i>
807	pbp2x_1_1	<i>Streptococcus pneumoniae</i>
808	pbp3Saureuc_1_1	<i>Staphylococcus aureus</i>
809	pbp4_1_1	<i>Enterococcus faecalis</i>
810	pbp5Efaecium_1_1	<i>Enterococcus faecium</i>
811	pbpC_1_1	<i>Enterococcus faecalis</i>
812	l-mecI_1_1	<i>Staphylococcus aureus</i>
813	pbp1a_1_1	<i>Streptococcus pneumoniae</i>
814	l-blaI_1_1	<i>Staphylococcus aureus</i>
815	blaTEM-106_1_1	<i>Escherichia coli</i>
816	blaOXY-KLOX_1_1	<i>Klebsiella oxytoca</i>
817	ftsWEF_1_1	<i>Enterococcus faecium</i>
818	fmhB_1_1	<i>Staphylococcus aureus</i>
819	cumA_1_1	<i>Proteus vulgaris</i>
820	femBShaemolyt_1_1	<i>Staphylococcus haemolyticus</i>
821	blaPER-1_1_1	<i>Pseudomonas aeruginosa</i>
822	bla_FOX-3_1_1	<i>Klebsiella oxytoca</i>
823	blaA_1_1	<i>Proteus vulgaris</i>
824	psrb_1_1	<i>Enterococcus faecium</i>
825	fmhA_1_1	<i>Staphylococcus aureus</i>
826	mecR1Sepid_1_1	<i>Staphylococcus epidermidis</i>
827	blaZ_1_1	<i>Staphylococcus aureus</i>
828	blaOXA-1_1_1	<i>Plasmid FGN238</i>
829	fox-6_1_1	<i>Klebsiella pneumoniae</i>
830	blaPrmi_1_1	<i>Proteus mirabilis</i>
831	aacA_aphDStwar_1_1	<i>Staphylococcus warneri</i>
832	aacC1_1_2	<i>Pseudomonas aeruginosa</i>
833	aacC2_1_1	<i>Escherichia coli</i>
834	strB_1_1	<i>Escherichia coli</i>
835	aadA_1_1	<i>Enterococcus faecalis</i>
836	aadB_1_2	<i>Escherichia coli</i>
837	aadD_1_1	<i>Staphylococcus aureus</i>

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Template source
838	aacA4_1_2	<i>Pseudomonas aeruginosa</i>
839	strA_1_1	<i>Escherichia coli</i>
840	aph-A3_1_1	<i>Staphylococcus aureus</i>
841	aacC1_1_1	<i>Pseudomonas aeruginosa</i>
842	aacA4_1_1	<i>Pseudomonas aeruginosa</i>
843	aacA-aphD_1_1	<i>Staphylococcus aureus</i>
844	l-spc_1_1	<i>Staphylococcus aureus</i>
845	aphA3_1_1	<i>synthetic construct</i>
846	ermC_1_1	<i>Staphylococcus aureus</i>
847	linB_1_1	<i>Enterococcus faecium</i>
848	satSA_1_1	<i>Staphylococcus aureus</i>
849	mdrSA_1_1	<i>Staphylococcus aureus</i>
850	l-linA_1_1	<i>Staphylococcus aureus</i>
851	erm B_1_2	<i>Staphylococcus aureus</i>
852	ermA_1_1	<i>Staphylococcus aureus</i>
853	satA_1_1	<i>Enterococcus faecium</i>
854	msrA_1_1	<i>Staphylococcus aureus</i>
855	mphBM_1_1	<i>Staphylococcus aureus</i>
856	mefA_1_1	<i>Streptococcus pyogenes</i>
857	mrX_1_1	<i>Escherichia coli</i>
858	dfrStrpneu_1_1	<i>Streptococcus pneumoniae</i>
859	dfrA_1_1	<i>Staphylococcus aureus</i>
860	cm IA5_1_1	<i>Escherichia coli</i>
861	catEfaecium_1_1	<i>Enterococcus faecium</i>
862	cat_1_1	<i>Staphylococcus aureus</i>
863	tetAJ_1_1	<i>Proteus mirabilis</i>
864	tetL_1_1	<i>Enterococcus faecalis</i>
865	tetM_1_1	<i>Enterococcus faecalis</i>
866	vanH(tn)_1_1	<i>Enterococcus faecium</i>
867	vanA_1_1	<i>Enterococcus faecium</i>
868	vanHB2_1_1	<i>Enterococcus faecium</i>
869	vanR_1_1	<i>Enterococcus faecium</i>
870	vanRB2_1_1	<i>Enterococcus faecium</i>
871	vanS(tn)_1_1	<i>Enterococcus faecium</i>
872	vanSB2_1_1	<i>Enterococcus faecium</i>
873	vanWB2_1_1	<i>Enterococcus faecium</i>
874	ddl_1_1	<i>Enterococcus faecalis</i>
875	ble_1_1	<i>Staphylococcus aureus</i>

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Template source
876	vanXB2_1_1	<i>Enterococcus faecium</i>
877	vanY(tn)_1_1	<i>Enterococcus faecium</i>
878	vanYB2_1_1	<i>Enterococcus faecium</i>
879	vanB_1_1	<i>Enterococcus faecalis</i>
880	vanZ(tn)_1_1	<i>Enterococcus faecium</i>
881	vanC-2_1_1	<i>Enterococcus flavescens</i>
882	vanX(tn)_1_1	<i>Enterococcus faecium</i>
883	acrB_1_1	<i>Proteus mirabilis</i>
884	mexB_1_2	<i>Pseudomonas aeruginosa</i>
885	l-qacA_1_1	<i>Staphylococcus aureus</i>
886	sull_1_1	<i>Escherichia coli</i>
887	sul_1_1	<i>Escherichia coli</i>
888	cadBStalugd_1_1	<i>Staphylococcus lugdunensis</i>
889	mexA_1_1	<i>Pseudomonas aeruginosa</i>
890	acrR_1_1	<i>Proteus mirabilis</i>
891	emeA_1_1	<i>Enterococcus faecalis</i>
892	acrA_1_1	<i>Proteus mirabilis</i>
893	rtn_1_1	<i>Proteus vulgaris</i>
894	abcXStrpmut_1_1	<i>Streptococcus mutans</i>
895	qacEdelta1_1_1	<i>Escherichia coli</i>
896	elkT-abcA_1_1	<i>Staphylococcus aureus</i>
897	l-cadA_1_1	<i>Staphylococcus aureus</i>
898	albA_1_1	<i>Klebsiella oxytoca</i>
899	wzm_1_1	<i>Klebsiella pneumoniae</i>
900	msrCb_1_1	<i>Enterococcus faecium</i>
901	nov_1_1	<i>Escherichia coli</i>
902	wzt_1_1	<i>Klebsiella pneumoniae</i>
903	wbbl_1_1	<i>Klebsiella pneumoniae</i>
904	norA23_1_1	<i>Staphylococcus aureus</i>
905	mexR_1_1	<i>Pseudomonas aeruginosa</i>
906	arr2_1_1	<i>Escherichia coli</i>
907	mreA_1_1	<i>Staphylococcus aureus</i>
908	l-cadC_1_1	<i>Staphylococcus aureus</i>
909	uvrA_1_1	<i>Enterococcus faecalis</i>
910	CRD2_1_1	<i>Candida albicans</i>
911	CDR1_1_1	<i>Candida albicans</i>
912	CDR1_2_1	<i>Candida albicans</i>
913	MET3_1_1	<i>Candida albicans</i>

EP 1 770 171 A1

(continued)

SEQ ID NO	Probe name	Template source
914	FET3_1_1	<i>Candida albicans</i>
915	FTR2_1_1	<i>Candida albicans</i>
916	MDR1-7_1_1	<i>Candida albicans</i>
917	ERG11_1_1	<i>Candida albicans</i>
918	SEC20_1_1	<i>Candida albicans</i>
919	rbcL_1_1	<i>Glycine max</i>
920	LDHA(hu)_1_1	<i>Homo sapiens</i>
921	GAPD(hu)_1_1	<i>Homo sapiens</i>
922	b-Act(hu)_1_1	<i>Homo sapiens</i>
923	ARHGDIA(hu)_1_1	<i>Homo sapiens</i>
924	PGK1(hu)_1_1	<i>Homo sapiens</i>
925	rbcL_1_2	<i>Glycine max</i>
926	16SPa_1_1	<i>Pseudomonas aeruginosa</i>
927	23SEfaecium_2_1	<i>Enterococcus faecium</i>
928	16SSStrepog_1_1	<i>Streptococcus pyogenes</i>
929	16SSStrepneu_1_1	<i>Streptococcus pneumoniae</i>
930	16SSStrepagalactiae_1_1	<i>Streptococcus agalactiae</i>
931	16SEfaecium_1_1	<i>Enterococcus faecium</i>
932	16SEfaecium_2_1	<i>Enterococcus faecium</i>
933	16SRNAEf_2_1	<i>Enterococcus faecalis</i>
934	16SKpn_1_1	<i>Klebsiella pneumoniae</i>
935	16SSa_3_1	<i>Staphylococcus aureus</i>
936	16SRNAEf_1_1	<i>Enterococcus faecalis</i>
937	16SShominis_1_1	<i>Staphylococcus hominis</i>
938	16SShaemolyt_1_1	<i>Staphylococcus haemolyticus</i>
939	23SEfaecium_1_1	<i>Enterococcus faecium</i>
940	16SrRNAPrmi_1_1	<i>Proteus mirabilis</i>
941	16SrRNAPrvu1_1_1	<i>Proteus vulgaris</i>
942	16SSa_1_1	<i>Staphylococcus aureus</i>
943	16SKlox_1_1	<i>Klebsiella oxytoca</i>
944	p53_1_1	<i>Mus musculus</i>
945	0135mihck_1_1	<i>Dictyostelium discoideum</i>
946	FAN_1_1	<i>Mus musculus</i>
947	0270cap_1_1	<i>Dictyostelium discoideum</i>

b) primer sequences

EP 1 770 171 A1

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
948	cataSaur_1_1	F(oward)
949	cataSaur_1_1	R(everse)
950	cataSaur_1_2	F
951	cataSaur_1_2	R
952	clfA_1_1	F
953	clfA_1_1	R
954	clfB_1_1	F
955	clfB_1_1	R
956	coa_1_1	F
957	coa_1_1	R
958	coa_1_2	F
959	coa_1_2	R
960	l-clpC_1_1	F
961	l-clpC_1_1	R
962	l-clpP_1_1	F
963	l-clpP_1_1	R
964	l-ctaA_1_1	F
965	l-ctaA_1_1	R
966	l-ctsR_1_1	F
967	l-ctsR_1_1	R
968	l-dltA_1_1	F
969	l-dltA_1_1	R
970	l-dltB_1_1	F
971	l-dltB_1_1	R
972	l-dltC_1_1	F
973	l-dltc_1_1	R
974	l-dnaK_1_1	F
975	l-dnaK_1_1	R
976	l-elkT_1_1	F
977	l-elkT_1_1	R
978	l-femD_1_1	F
979	l-femD_1_1	R
980	l-glnA_1_1	F
981	l-glnA_1_1	R
982	l-glnR_1_1	F
983	l-glnR_1_1	R
984	l-grlA_1_1	F
985	l-grlA_1_1	R
986	l-grlB_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
987	l-grlB_1_1	R
988	l-groEL_1_1	F
989	l-groEL_1_1	R
990	l-groES_1_1	F
991	l-groES_1_1	R
992	l-hemA_1_1	F
993	l-hemA_1_1	R
994	l-hemE_1_1	F
995	l-hemE_1_1	R
996	l-hemH_1_1	F
997	l-hemH_1_1	R
998	l-hemL_1_1	F
999	l-hemL_1_1	R
1000	l-hemY_1_1	F
1001	l-hemY_1_1	R
1002	l-lepA_1_1	F
1003	l-lepA_1_1	R
1004	l-lrgA_1_1	F
1005	l-lrgA_1_1	R
1006	l-lrgB_1_1	F
1007	l-lrgB_1_1	R
1008	l-lytM_1_1	F
1009	l-lytM_1_1	R
1010	l-menB_1_1	F
1011	l-menB_1_1	R
1012	l-menD_1_1	F
1013	l-menD_1_1	R
1014	l-menE_1_1	F
1015	l-menE_1_1	R
1016	l-menF_1_1	F
1017	l-menF_1_1	R
1018	l-mreB_1_1	F
1019	l-mreB_1_1	R
1020	l-mreR_1_1	F
1021	l-mreR_1_1	R
1022	l-mutL_1_1	F
1023	l-mutL_1_1	R
1024	l-mutS_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
1025	l-mutS_1_1	R
1026	l-NAG_1_1	F
1027	l-NAG_1_1	R
1028	l-pbg_1_1	F
1029	l-pbg_1_1	R
1030	l-pbpF_1_1	F
1031	l-pbpF_1_1	R
1032	l-pdhB_1_1	F
1033	l-pdhB_1_1	R
1034	l-pdhC_1_1	F
1035	l-pdhC_1_1	R
1036	l-rsbU_1_1	F
1037	l-rsbU_1_1	R
1038	l-rsbV_1_1	F
1039	l-rsbV_1_1	R
1040	l-rsbW_1_1	F
1041	l-rsbW_1_1	R
1042	l-sgp_1_1	F
1043	l-sgp_1_1	R
1044	l-sirR_1_1	F
1045	l-sirR_1_1	R
1046	l-sodA_1_1	F
1047	l-sodA_1_1	R
1048	l-sodB_1_1	F
1049	l-sodB_1_1	R
1050	l-sstA_1_1	F
1051	l-sstA_1_1	R
1052	l-sstB_1_1	F
1053	l-sstB_1_1	R
1054	l-sstC_1_1	F
1055	l-sstC_1_1	R
1056	l-sstD_1_1	F
1057	l-sstD_1_1	R
1058	l-trx_1_1	F
1059	l-trx_1_1	R
1060	l-yhiN_1_1	F
1061	l-yhiN_1_1	R
1062	epiP-bsaP_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
1063	epiP-bsaP_1_1	R
1064	geh_1_1	F
1065	geh_1_1	R
1066	gyrA_1_1	F
1067	gyrA_1_1	R
1068	gyrB_1_1	F
1069	gyrB_1_1	R
1070	hemB_1_1	F
1071	hemB_1_1	R
1072	hemC_1_1	F
1073	hemC_1_1	R
1074	hemD_1_1	F
1075	hemD_1_1	R
1076	hemN_1_1	F
1077	hemN_1_1	R
1078	hsdS_1_1	F
1079	hsdS_1_1	R
1080	hsdS_2_1	F
1081	hsdS_2_1	R
1082	lip_1_1	F
1083	lip_1_1	R
1084	menC_1_1	F
1085	menC_1_1	R
1086	murC_1_1	F
1087	murC_1_1	R
1088	nuc_1_1	F
1089	nuc_1_1	R
1090	pdhD_1_1	F
1091	pdhD_1_1	R
1092	rpoB_1_1	F
1093	rpoB_1_1	R
1094	SAV0431_1_1	F
1095	SAV0431_1_1	R
1096	SAV0439_1_1	F
1097	SAV0439_1_1	R
1098	SAV0440_1_1	F
1099	SAV0440_1_1	R
1100	SAV0441_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
1101	SAV0441_1_1	R
1102	sigB_1_1	F
1103	sigB_1_1	R
1104	spa_1_2	F
1105	spa_1_2	R
1106	sstC_1_1	F
1107	sstC_1_1	R
1108	tag_1_1	F
1109	tag_1_1	R
1110	tyrA_1_1	F
1111	tyrA_1_1	R
1112	l-aroC_1_1	F
1113	l-aroC_1_1	R
1114	l-aroA_1_1	F
1115	l-aroA_1_1	R
1116	l-cna_1_1	F
1117	l-cna_1_1	R
1118	l-ebpS_1_1	F
1119	l-ebpS_1_1	R
1120	l-eno_1_1	F
1121	l-eno_1_1	R
1122	l-fbpA_1_1	F
1123	l-fbpA_1_1	R
1124	l-fib_1_1	F
1125	l-fib_1_1	R
1126	l-fnbB_1_1	F
1127	l-fnbB_1_1	R
1128	l-srtA_1_1	F
1129	l-srtA_1_1	R
1130	l-stpC_1_1	F
1131	l-stpC_1_1	R
1132	l-fnbA_1_1	F
1133	l-fnbA_1_1	R
1134	l-spa_1_1	F
1135	l-spa_1_1	R
1136	l-aroE_1_1	F
1137	l-aroE_1_1	R
1138	l-aroF_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
1139	l-aroF_1_1	R
1140	l-aroG_1_1	F
1141	l-aroG_1_1	R
1142	l-asp23_1_1	F
1143	l-asp23_1_1	R
1144	l-atl_1_1	F
1145	l-atl_1_1	R
1146	bsaE_1_1	F
1147	bsaE_1_1	R
1148	bsaG_1_1	F
1149	bsaG_1_1	R
1150	cap5h_1_1	F
1151	cap5h_1_1	R
1152	cap5i_1_1	F
1153	cap5i_1_1	R
1154	cap5j_1_1	F
1155	cap5j_1_1	R
1156	cap5k_1_1	F
1157	cap5k_1_1	R
1158	capBH_1_1	F
1159	cap8H_1_1	R
1160	cap8l_1_1	F
1161	cap8l_1_1	R
1162	cap8J_1_1	F
1163	cap8J_1_1	R
1164	cap8K_1_1	F
1165	cap8K_1_1	R
1166	l-hld_1_1	F
1167	l-hld_1_1	R
1168	l-hysA_1_1	F
1169	l-hysA_1_1	R
1170	l-IgGbg_1_1	F
1171	l-IgGbg_1_1	R
1172	EDIN_1_1	F
1173	EDIN_1_1	R
1174	eta_1_1	F
1175	eta_1_1	R
1176	etb_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
1177	etb_1_1	R
1178	hglA_1_1	F
1179	hglA_1_1	R
1180	hglA_2_1	F
1181	hglA_2_1	R
1182	hglB_1_1	F
1183	hglB_1_1	R
1184	hglC_2_1	F
1185	hglC_2_1	R
1186	hla_1_1	F
1187	hla_1_1	R
1188	hlb_1_2	F
1189	hlb_1_2	R
1190	lukF_1_1	F
1191	lukF_1_1	R
1192	lukS_1_1	F
1193	lukS_1_1	R
1194	lukS_2_1	F
1195	lukS_2_1	R
1196	NAG_1_1	F
1197	NAG_1_1	R
1198	sak_1_1	F
1199	sak_1_1	R
1200	sea_1_1	F
1201	sea_1_1	R
1202	seb_1_1	F
1203	seb_1_1	R
1204	sec1_1_1	F
1205	sec1_1_1	R
1206	seg_1_1	F
1207	seg_1_1	R
1208	seh_1_1	F
1209	seh_1_1	R
1210	sel_1_1	F
1211	sel_1_1	R
1212	set15_1_1	F
1213	set15_1_1	R
1214	set6_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
1215	set6_1_1	R
1216	set7_1_1	F
1217	set7_1_1	R
1218	set8_1_1	F
1219	set8_1_1	R
1220	sprV8_1_1	F
1221	sprV8_1_1	R
1222	tst_1_1	F
1223	tst_1_1	R
1224	l-sdrC_1_1	F
1225	l-sdrC_1_1	R
1226	l-sdrD_1_1	F
1227	l-sdrD_1_1	R
1228	l-sdrE_1_1	F
1229	l-sdrE_1_1	R
1230	b1169_1_1	F
1231	b1169_1_1	R
1232	envZ_1_1	F
1233	envZ_1_1	R
1234	fliCb_1_1	F
1235	fliCb_1_1	R
1236	nfrB_1_1	F
1237	nfrB_1_1	R
1238	nlpA_1_1	F
1239	nlpA_1_1	R
1240	pilAe_1_1	F
1241	pilAe_1_1	R
1242	yacH_1_1	F
1243	yacH_1_1	R
1244	yagX_1_1	F
1245	yagX_1_1	R
1246	ycdS_1_1	F
1247	ycdS_1_1	R
1248	yciQ_1_1	F
1249	yciQ_1_1	R
1250	ymcA_1_1	F
1251	ymcA_1_1	R
1252	b1202_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
1253	b1202_1_1	R
1254	eae_1_1	F
1255	eae_1_1	R
1256	eltB_1_1	F
1257	eltB_1_1	R
1258	escR_1_1	F
1259	escR_1_1	R
1260	escT_1_1	F
1261	escT_1_1	R
1262	escU_1_1	F
1263	escU_1_1	R
1264	espB_1_1	F
1265	espB_1_1	R
1266	fes_1_1	F
1267	fes_1_1	R
1268	fes_2_1	F
1269	fes_2_1	R
1270	fteA_1_1	F
1271	fteA_1_1	R
1272	hlyA_1_1	F
1273	hlyA_1_1	R
1274	hlyB_1_1	F
1275	hlyB_1_1	R
1276	iucA_1_1	F
1277	iucA_1_1	R
1278	iucB_1_1	F
1279	iucB_1_1	R
1280	iucC_1_1	F
1281	iucC_1_1	R
1282	papG_1_1	F
1283	papG_1_1	R
1284	rfbE_1_1	F
1285	rfbE_1_1	R
1286	shuA_1_1	F
1287	shuA_1_1	R
1288	SLTII_1_1	F
1289	SLTII_1_1	R
1290	toxA-LTPA_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
1291	toxA-LTPA_1_1	R
1292	VT2vaB_1_1	F
1293	VT2vaB_1_1	R
1294	ardeSE0106_1_1	F
1295	ardeSE0106_1_1	R
1296	ardeSE0107_1_1	F
1297	ardeSE0107_1_1	R
1298	aroiSE0105_1_1	F
1299	aroiSE0105_1_1	R
1300	atIE_1_1	F
1301	atIE_1_1	R
1302	agrB_1_1	F
1303	agrB_1_1	R
1304	agrC_1_1	F
1305	agrC_1_1	R
1306	alphSE1368_1_1	F
1307	alphSE1368_1_1	R
1308	gad_1_1	F
1309	gad_1_1	R
1310	glucSE1191_1_1	F
1311	glucSE1191_1_1	R
1312	hsp10_1_1	F
1313	hsp10_1_1	R
1314	icaA_1_1	F
1315	icaA_1_1	R
1316	icaB_1_1	F
1317	icaB_1_1	R
1318	mvaSSepid_1_1	F
1319	mvaSSepid_1_1	R
1320	nitreSE1972_1_1	F
1321	nitreSE1972_1_1	R
1322	nitreSE1974_1_1	F
1323	nitreSE1974_1_1	R
1324	nitreSE1975_1_1	F
1325	nitreSE1975_1_1	R
1326	oiamtSE1209_1_1	F
1327	oiamtSE1209_1_1	R
1328	ORF1Sepid_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
1329	ORF1Sepid_1_1	R
1330	ORF3bSepid_1_1	F
1331	ORF3bSepid_1_1	R
1332	qacR_1_1	F
1333	qacR_1_1	R
1334	sin_1_1	F
1335	sin_1_1	R
1336	ureSE1861_1_1	F
1337	ureSE1861_1_1	R
1338	ureSE1863_1_1	F
1339	ureSE1863_1_1	R
1340	ureSE1864_1_1	F
1341	ureSE1864_1_1	R
1342	ureSE1865_1_1	F
1343	ureSE1865_1_1	R
1344	ureSE1867_1_1	F
1345	ureSE1867_1_1	R
1346	9caD_1_1	F
1347	gcaD_1_1	R
1348	hld_orf5_1_1	F
1349	hld_orf5_1_1	R
1350	icaC_1_1	F
1351	icaC_1_1	R
1352	icaD_1_1	F
1353	icaD_1_1	R
1354	icaR_1_1	F
1355	icaR_1_1	R
1356	psm_beta 1 and2_1_1	F
1357	psm_beta1and2_1_1	R
1358	purR_1_1	F
1359	purR_1_1	R
1360	spoVG_1_1	F
1361	spoVG_1_1	R
1362	yabJ_1_1	F
1363	yabJ_1_1	R
1364	folQShaemolyt_1_1	F
1365	folQShaemolyC_1_1	R
1366	mvaCShaemolyticus_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
1367	mvaCShaemolyticus_1_1	R
1368	mvaDShaemolyt_1_1	F
1369	mvaDShaemolyt_1_1	R
1370	mvaK1Shaemolyticus_1_1	F
1371	mvaKiShaemolyticus_1_1	R
1372	mvaSShaemolyticus_1_1	F
1373	mvaSShaemolyticus_1_1	R
1374	RNApolsigm_1_1	F
1375	RNApolsigm_1_1	R
1376	lipShaemolyC1_1	F
1377	lipShaemolyt_1_1	R
1378	agrB2Stalugd_1_1	F
1379	agrB2Stalugd_1_1	R
1380	agrC2Stalugd_1_1	F
1381	agrC2Stalugd_1_1	R
1382	agrCStalugd_1_1	F
1383	agrCStalugd_1_1	R
1384	slamStalugd_1_1	F
1385	slamStalugd_1_1	R
1386	fblStalugd_1_1	F
1387	fblStalugd_1_1	R
1388	slushABCStalugd_1_1	F
1389	slushABCStalugd_1_1	R
1390	RNApolsigmSsapro_1_1	F
1391	RNApolsigmSsapro_1_1	R
1392	RNApolsigmSsapro_1_2	F
1393	RNApolsigmSsapro_1_2	R
1394	msrw1Stwar_1_1	F
1395	msrw1Stwar_1_1	R
1396	nukMStwar_1_1	F
1397	nukMStwar_1_1	R
1398	proDStwar_1_1	F
1399	proDStwar_1_1	R
1400	proMStwar_1_1	F
1401	proMStwar_1_1	R
1402	sigrpoStwar_1_1	F
1403	sigrpoStwar_1_1	R
1404	tnpStwar_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
1405	tnpStwar_1_1	R
1406	gehASTwar_1_1	F
1407	gehASTwar_1_1	R
1408	ARG56_1_1	F
1409	ARG56_1_1	R
1410	ASL43f_1_1	F
1411	ASL43f_1_1	R
1412	BGL2_1_1	F
1413	BGL2_1_1	R
1414	CACHS3_1_1	F
1415	CACHS3_1_1	R
1 41 6	CCT8_1_1	F
1417	CCT8_1_1	R
1418	CDC37_1_1	F
1419	CDC37_1_1	R
1420	CEF3_1_1	F
1421	CEF3_1_1	R
1422	CHS1_1_1	F
1423	CHS1_1_1	R
1424	CHS2_1_1	F
1425	CHS2_1_1	R
1426	CHS4_1_1	F
1427	CHS4_1_1	R
1428	CHS5_1_1	F
1429	CHS5_1_1	R
1430	CHT1_1_1	F
1431	CHT1_1_1	R
1432	CHT2_1_1	F
1433	CHT2_1_1	R
1434	CHT4_1_1	F
1435	CHT4_1_1	R
1436	CSA1_1_1	F
1437	CSA1_1_1	R
1438	5triphosphatase_1_1	F
1439	5triphosphatase_1_1	R
1440	AAF1_1_1	F
1441	AAF1_1_1	R
1442	ADH1_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
1443	ADH1_1_1	R
1444	ALS1_1_1	F
1445	ALS1_1_1	R
1446	ALS7_1_1	F
1447	ALS7_1_1	R
1448	EDT1_1_1	F
1449	EDT1_1_1	R
1450	ELF_1_1	F
1451	ELF_1_1	R
1452	ESS1_1_1	F
1453	ESS1_1_1	R
1454	FAL1_1_1	F
1455	FAL1_1_1	R
1456	GAP1_1_1	F
1457	GAP1_1_1	R
1458	GNA1_1_1	F
1459	GNA1_1_1	R
1460	GSC1_1_1	F
1461	GSC1_1_1	R
1462	GSL1_1_1	F
1463	GSL1_1_1	R
1464	HIS1_1_1	F
1465	HIS1_1_1	R
1466	HTS1_1_1	F
1467	HTS1_1_1	R
1468	HWP1_2_1	F
1469	HWP1_2_1	R
1470	HYR1_1_1	F
1471	HYR1_1_1	R
1472	INT1a_1_1	F
1473	INT1a_1_1	R
1474	KRE15f_1_1	F
1475	KRE15f_1_1	R
1476	KRE6_1_1	F
1477	KRE6_1_1	R
1478	KRE9_1_1	F
1479	KRE9_1_1	R
1480	MIG1_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
1481	MIG1_1_1	R
1482	MLS1_1_1	F
1483	MLS1_1_1	R
1484	MP65_1_1	F
1485	MP65_1_1	R
1486	NDE1_1_1	F
1487	NDE1_1_1	R
1488	PFK2_1_1	F
1489	PFK2_1_1	R
1490	PHR1_1_1	F
1491	PHR1_1_1	R
1492	PHR2_1_1	F
1493	PHR2_1_1	R
1494	PHR3_1_1	F
1495	PHR3_1_1	R
1496	PRA1_1_1	F
1497	PRA1_1_1	R
1498	PRS1_1_1	F
1499	PRS1_1_1	R
1500	RBT1_1_1	F
1501	RBT1_1_1	R
1502	RBT4_1_1	F
1503	RBT4_1_1	R
1504	RHO1_1_1	F
1505	RHO1_1_1	R
1506	RNR1_1_1	F
1507	RNR1_1_1	R
1508	RPB7_1_1	F
1509	RPB7_1_1	R
1510	RPL13_1_1	F
1511	RPL13_1_1	R
1512	RVS167_1_1	F
1513	RVS167_1_1	R
1514	SHA3_1_1	F
1515	SHA3_1_1	R
1516	SKN1_1_1	F
1517	SKN1_1_1	R
1518	SRB1_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
1519	SRB1_1_1	R
1520	TCA1_1_1	F
1521	TCA1_1_1	R
1522	TRP1_1_1	F
1523	TRP1_1_1	R
1524	YAE1_1_1	F
1525	YAE1_1_1	R
1526	YRB1_1_1	F
1527	YRB1_1_1	R
1528	YST1exon2_1_1	F
1529	YST1exon2_1_1	R
1530	CCN1_1_1	F
1531	CCN1_1_1	R
1532	CDC28_1_1	F
1533	CDC28_1_1	R
1534	CLN2_1_1	F
1535	CLN2_1_1	R
1536	CPH1_1_1	F
1537	CPH1_1_1	R
1538	CYB1_1_1	F
1539	CYB1_1_1	R
1540	EFG1_1_1	F
1541	EFG1_1_1	R
1542	MNT1_1_1	F
1543	MNT1_1_1	R
1544	RBF1_1_1	F
1545	RBF1_1_1	R
1546	RBF1_2_1	F
1547	RBF1_2_1	R
1548	RIM101_1_1	F
1549	RIM101_1_1	R
1550	RIM8_1_1	F
1551	RIM8_1_1	R
1552	SEC14_1_1	F
1553	SEC14_1_1	R
1554	SEC4_1_1	F
1555	SEC4_1_1	R
1556	TUP1_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
1557	TUP1_1_1	R
1558	YPT1_1_1	F
1559	YPT1_1_1	R
1560	ZNF1CZF1_2_1	F
1561	ZNF1CZF1_2_1	R
1562	arcA_1_1	F
1563	arcA_1_1	R
1564	arcC_1_1	F
1565	arcC_1_1	R
1566	bkdA_1_1	F
1567	bkdA_1_1	R
1568	cad_1_1	F
1569	cad_1_1	R
1570	camE1_1_1	F
1571	camE1_1_1	R
1572	csrA_1_1	F
1573	csrA_1_1	R
1574	dacA_1_1	F
1575	dacA_1_1	R
1576	dfr_1_1	F
1577	dfr_1_1	R
1578	dhoD1a_1_1	F
1579	dhoD1a_1_1	R
1580	ABC-eltA_1_1	F
1581	ABC-eltA_1_1	R
1582	agrBfs_1_1	F
1583	agrBfs_1_1	R
1584	agrCfs_1_1	F
1585	agrCfs_1_1	R
1586	dnaE_1_1	F
1587	dnaE_1_1	R
1588	ebsA_1_1	F
1589	ebsA_1_1	R
1590	ebsB_1_1	F
1591	ebsB_1_1	R
1592	eep_1_1	F
1593	eep_1_1	R
1594	efaR_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
1595	efaR_1_1	R
1596	gls24_glsB_1_1	F
1597	gls24_glsB_1_1	R
1598	gph_1_1	F
1599	gph_1_1	R
1600	gyrAEf_1_1	F
1601	gyrAEf_1_1	R
1602	metEf_1_1	F
1603	metEf_1_1	R
1604	mntHCb2_1_1	F
1605	mntHCb2_1_1	R
1606	mob2_1_1	F
1607	mob2_1_1	R
1608	mvaD_1_1	F
1609	mvaD_1_1	R
1610	mvaE_1_1	F
1611	mvaE_1_1	R
1612	parC_1_1	F
1613	parC_1_1	R
1614	pcfG_1_1	F
1615	pcfG_1_1	R
1616	phoZ_1_1	F
1617	phoZ_1_1	R
1618	polC_1_1	F
1619	polC_1_1	R
1620	ptb_1_1	F
1621	ptb_1_1	R
1622	recS1_1_1	F
1623	recS1_1_1	R
1624	rpoN_1_1	F
1625	rpoN_1_1	R
1626	tms_1_1	F
1627	tms_1_1	R
1628	tyrDC_1_1	F
1629	tyrDC_1_1	R
1630	tyrS_1_1	F
1631	tyrS_1_1	R
1632	asa1_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
1633	asa1_1_1	R
1634	asp1_1_1	F
1635	asp1_1_1	R
1636	cgh_1_1	F
1637	cgh_1_1	R
1638	cylA_1_1	F
1639	cylA_1_1	R
1640	cylB_1_1	F
1641	cylB_1_1	R
1642	cylI_1_1	F
1643	cylI_1_1	R
1644	cylL_cylS_1_1	F
1645	cylL_cylS_1_1	R
1646	cylM_1_1	F
1647	cylM_1_1	R
1648	ace_1_1	F
1649	ace_1_1	R
1650	ef00108_1_1	F
1651	ef00108_1_1	R
1652	ef00109_1_1	F
1653	ef00109_1_1	R
1654	ef0011_1_1	F
1655	ef0011_1_1	R
1656	ef00113_1_1	F
1657	ef00113_1_1	R
1658	ef0012_1_1	F
1659	ef0012_1_1	R
1660	ef0022_1_1	F
1661	ef0022_1_1	R
1662	ef0031_1_1	F
1663	ef0031_1_1	R
1664	ef0032_1_1	F
1665	ef0032_1_1	R
1666	ef0040_1_1	F
1667	ef0040_1_1	R
1668	ef0058_1_1	F
1669	ef0058_1_1	R
1670	enlA_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
1671	enIA_1_1	R
1672	esa_1_1	F
1673	esa_1_1	R
1674	esp_1_1	F
1675	esp_1_1	R
1676	gelE_1_1	F
1677	gelE_1_1	R
1678	groEL_1_1	F
1679	groEL_1_1	R
1680	groES_1_1	F
1681	groES_1_1	R
1682	rt1_1_1	F
1683	rt1_1_1	R
1684	sala_1_1	F
1685	sala_1_1	R
1686	salb_1_1	F
1687	salb_1_1	R
1688	sea1_1_1	F
1689	sea1_1_1	R
1690	sep1_1_1	F
1691	sep1_1_1	R
1692	vicK_1_1	F
1693	vicK_1_1	R
1694	yycH_1_1	F
1695	yycH_1_1	R
1696	yycI_1_1	F
1697	yycI_1_1	R
1698	yycJ_1_1	F
1699	yycJ_1_1	R
1700	bglB_1_1	F
1701	bglB_1_1	R
1702	bglR_1_1	F
1703	bglR_1_1	R
1704	bglS_1_1	F
1705	bglS_1_1	R
1706	efmA_1_1	F
1707	efmA_1_1	R
1708	efmB_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
1709	efmB_1_1	R
1710	efmC_1_1	F
1711	efmC_1_1	R
1712	mreC_1_1	F
1713	mreC_1_1	R
1714	mreD_1_1	F
1715	mreD_1_1	R
1716	mvaDEfaecium_1_1	F
1717	mvaDEfaecium_1_1	R
1718	mvaEEfaecium_1_1	F
1719	mvaEEfaecium_1_1	R
1720	mvaK1Efaecium_1_1	F
1721	mvaK1Efaecium_1_1	R
1722	mvaK2Efaecium_1_1	F
1723	mvaK2Efaecium_1_1	R
1724	mvaSEfaecium_1_1	F
1725	mvaSEfaecium_1_1	R
1726	orf3_4Efaeciumb_1_1	F
1727	orf3_4Efaeciumb_1_1	R
1728	orf6_7Efaecium_1_1	F
1729	orf6_7Efaecium_1_1	R
1730	orf7_8Efaecium_1_1	F
1731	orf7_8Efaecium_1_1	R
1732	orf9_10Efaecium_1_1	F
1733	orf9_10Efaecium_1_1	R
1734	entA_entl_1_1	F
1735	entA_entl_1_1	R
1736	entD_1_1	F
1737	entD_1_1	R
1738	entR_1_1	F
1739	entR_1_1	R
1740	oep_1_1	F
1741	oep_1_1	R
1742	sagA_1_2	F
1743	sagA_1_2	R
1744	atsA_1_1	F
1745	atsA_1_1	R
1746	atsB_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
1747	atsB_1_1	R
1748	budC_1_1	F
1749	budC_1_1	R
1750	citA_1_1	F
1751	citA_1_1	R
1752	citW_1_1	F
1753	citW_1_1	R
1754	citX_1_1	F
1755	citX_1_1	R
1756	dalD_1_1	F
1757	dalD_1_1	R
1758	dalK_1_1	F
1759	dalK_1_1	R
1760	dalT_1_1	F
1761	dalT_1_1	R
1762	acoA_1_1	F
1763	acoA_1_1	R
1764	acoB_1_1	F
1765	acoB_1_1	R
1766	acoC_1_1	F
1767	acoC_1_1	R
1768	ahlK_1_1	F
1769	ahlK_1_1	R
1770	fimK_1_1	F
1771	fimK_1_1	R
1772	glfKPN2_1_1	F
1773	glfKPN2_1_1	R
1774	ltrA_1_1	F
1775	ltrA_1_1	R
1776	mdcC_1_1	F
1777	mdcC_1_1	R
1778	mdcF_1_1	F
1779	mdcF_1_1	R
1780	mdcH_1_1	F
1781	mdcH_1_1	R
1782	mrkA_1_1	F
1783	mrkA_1_1	R
1784	mtrK_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
1785	mtrK_1_1	R
1786	nifF_1_1	F
1787	nifF_1_1	R
1788	nifK_1_1	F
1789	nifK_1_1	R
1790	nifN_1_1	F
1791	nifN_1_1	R
1792	tyrP_1_1	F
1793	tyrP_1_1	R
1794	ureA_1_1	F
1795	ureA_1_1	R
1796	wbbO_1_1	F
1797	wbbO_1_1	R
1798	wza_1_1	F
1799	wza_1_1	R
1800	wzb_1_1	F
1801	wzb_1_1	R
1802	wzmKPN2_1_1	F
1803	wzmKPN2_1_1	R
1804	wztKPN2_1_1	F
1805	wztKPN2_1_1	R
1806	yojH_1_1	F
1807	yojH_1_1	R
1808	liac_1_1	F
1809	liac_1_1	R
1810 0	cim_1_1	F
1811	cim_1_1	R
1812	aldA_1_1	F
1813	aldA_1_1	R
1814	aldA_2_1	F
1815	aldA_2_1	R
1816	hemly_1_1	F
1817	hemly_1_1	R
1818	pSL017_1_1	F
1819	pSL017_1_1	R
1820	pSL020_1_1	F
1821	pSL020_1_1	R
1822	rcsA_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
1823	rcaA_1_1	R
1824	rmlC_1_1	F
1825	rmlC_1_1	R
1826	rmlD_1_1	F
1827	rmlD_1_1	R
1828	waaG_1_1	F
1829	waaG_1_1	R
1830	wbbD_1_1	F
1831	wbbD_1_1	R
1832	wbbM_1_1	F
1833	wbbM_1_1	R
1834	wbbN_1_1	F
1835	wbbN_1_1	R
1836	wbdA_1_1	F
1837	wbdA_1_1	R
1838	wbdC_1_1	F
1839	wbdC_1_1	R
1840	wztKpn_1_1	F
1841	wztKpn_1_1	R
1842	yibD_1_1	F
1843	yibD_1_1	R
1844	cymA_1_1	F
1845	cymA_1_1	R
1846	cymD_1_1	F
1847	cymD_1_1	R
1848	cymE_1_1	F
1849	cymE_1_1	R
1850	cymH_1_1	F
1851	cymH_1_1	R
1852	cymI_1_1	F
1853	cymI_1_1	R
1854	cymJ_1_1	F
1855	cymJ_1_1	R
1856	ddrA_1_1	F
1857	ddrA_1_1	R
1858	fdt-1_1_1	F
1859	fdt-1_1_1	R
1860	fdt-2_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
1861	fdt-2_1_1	R
1862	fdt-3_1_1	F
1863	fdt-3_1_1	R
1864	gatY_1_1	F
1865	gatY_1_1	R
1866	hydH_1_1	F
1867	hydH_1_1	R
1868	masA_1_1	F
1869	masA_1_1	R
1870	nasA_1_1	F
1871	nasA_1_1	R
1872	nasE_1_1	F
1873	nasE_1_1	R
1874	nasF_1_1	F
1875	nasF_1_1	R
1876	pehX_1_1	F
1877	pehX_1_1	R
1878	pelX_1_1	F
1879	pelX_1_1	R
1880	tagH_1_1	F
1881	tagH_1_1	R
1882	tagK_1_1	F
1883	tagK_1_1	R
1884	tagT_1_1	F
1885	tagT_1_1	R
1886	glpR_1_1	F
1887	glpR_1_1	R
1888	lasRb_1_1	F
1889	lasRb_1_1	R
1890	OrfX_1_1	F
1891	OrfX_1_1	R
1892	pa0260_1_1	F
1893	pa0260_1_1	R
1894	pa0572_1_1	F
1895	pa0572_1_1	R
1896	pa0625_1_1	F
1897	pa0625_1_1	R
1898	pa0636_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
1899	pa0636_1_1	R
1900	pa1046_1_1	F
1901	pa1046_1_1	R
1902	pa1069_1_1	F
1903	pa1069_1_1	R
1904	pa1846_1_1	F
1905	pa1846_1_1	R
1906	pa3866_1_1	F
1907	pa3866_1_1	R
1908	pa4082_1_1	F
1909	pa4082_1_1	R
1910	pilAp_1_1	F
1911	pilAp_1_1	R
1912	PilAp2_1_1	F
1913	PilAp2_1_1	R
1914	pilC_1_1	F
1915	pilC_1_1	R
1916	PstP_1_1	F
1917	PstP_1_1	R
1918	purK_1_1	F
1919	purK_1_1	R
1920	uvrDII_1_1	F
1921	uvrDII_1_1	R
1922	vsml_1_1	F
1923	vsml_1_1	R
1924	vsmR_1_2	F
1925	vsmR_1_2	R
1926	xcpX_1_1	F
1927	xcpX_1_1	R
1928	aprA_1_1	F
1929	aprA_1_1	R
1930	aprE_1_1	F
1931	aprE_1_1	R
1932	ctx_1_2	F
1933	ctx_1_2	R
1934	algB_1_1	F
1935	algB_1_1	R
1936	algN_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
1937	algN_1_1	R
1938	algR_1_1	F
1939	algR_1_1	R
1940	ExoS_1_1	F
1941	ExoS_1_1	R
1942	fpvA_1_1	F
1943	fpvA_1_1	R
1944	lasRa_1_1	F
1945	lasRa_1_1	R
1946	lipA_1_1	F
1947	lipA_1_1	R
1948	lipH_1_1	F
1949	lipH_1_1	R
1950	Orf159_1_2	F
1951	Orf159_1_2	R
1952	Orf252_1_1	F
1953	Orf252_1_1	R
1954	pchG_1_1	F
1955	pchG_1_1	R
1956	PhzA_1_1	F
1957	PhzA_1_1	R
1958	PhzB_1_1	F
1959	PhzB_1_1	R
1960	PLC_1_1	F
1961	PLC_1_1	R
1962	plcN_1_1	F
1963	plcN_1_1	R
1964	plcR_1_1	F
1965	plcR_1_1	R
1966	pvdD_1_1	F
1967	pvdD_1_1	R
1968	pvdF_1_2	F
1969	pvdF_1_2	R
1970	pyocinS1_1_1	F
1971	pyocinS1_1_1	R
1972	pyocinS1im_1_1	F
1973	pyocinS1im_1_1	R
1974	pyocinS2_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
1975	pyocinS2_1_1	R
1976	pys2_1_1	F
1977	pys2_1_1	R
1978	pys2_2_1	F
1979	pys2_2_1	R
1980	rbf303_1_1	F
1981	rbf303_1_1	R
1982	rhIA_1_1	F
1983	rhIA_1_1	R
1984	rhIB_1_1	F
1985	rhIB_1_1	R
1986	rhIR_1_1	F
1987	rhIR_1_1	R
1988	TnAP41_1_2	F
1989	TnAP41_1_2	R
1990	toxA_1_1	F
1991	toxA_1_1	R
1992	cap1 EStrpneu_1_1	F
1993	cap1 EStrpneu_1_1	R
1994	cap1 FStrpneu_1_1	F
1995	cap1 FStrpneu_1_1	R
1996	cap1 GStrpneu_1_1	F
1997	cap1 GStrpneu_1_1	R
1998	cap3AStrpneu_1_1	F
1999	cap3AStrpneu_1_1	R
2000	cap3BStrpneu_1_1	F
2001	cap3BStrpneu_1_1	R
2002	celAStrpneu_1_1	F
2003	celAStrpneu_1_1	R
2004	celBStrpneu_1_1	F
2005	celBStrpneu_1_1	R
2006	cglAStrpneu_1_1	F
2007	cglAStrpneu_1_1	R
2008	cglBStrpneu_1_1	F
2009	cglBStrpneu_1_1	R
2010	cglCStrpneu_1_1	F
2011	cglCStrpneu_1_1	R
2012	cglDStrpneu_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
2013	cglDStrpneu_1_1	R
2014	cinA_1_1	F
2015	cinA_1_1	R
2016	cps14EStrpneum_1_1	F
2017	cps14EStrpneum_1_1	R
2018	cps14FStrpneum_1_1	F
2019	cps14FStrpneum_1_1	R
2020	cps14GStrpneum_1_1	F
2021	cps14GStrpneum_1_1	R
2022	cps14HStrpneum_1_1	F
2023	cps14HStrpneum_1_1	R
2024	cps19aHStrpneum_1_1	F
2025	cps19aHStrpneum_1_1	R
2026	cps19aIStrpneum_1_1	F
2027	cps19aIStrpneum_1_1	R
2028	cps19aKStrpneum_1_1	F
2029	cps19aKStrpneum_1_1	R
2030	cps19fGStrpneum_1_1	F
2031	cps19fGStrpneum_1_1	R
2032	cps23fGStrpneum_1_1	F
2033	cps23fGStrpneum_1_1	R
2034	dexB_1_1	F
2035	dexB_1_1	R
2036	dinF_1_1	F
2037	dinF_1_1	R
2038	1760Strpneu_1_1	F
2039	1760Strpneu_1_1	R
2040	acyPStrpneu_1_1	F
2041	acyPStrpneu_1_1	R
2042	endAStrpneu_1_1	F
2043	endAStrpneu_1_1	R
2044	exoAStrpneu_1_1	F
2045	exoAStrpneu_1_1	R
2046	exp72_1_1	F
2047	exp72_1_1	R
2048	fnlAStrpneu_1_1	F
2049	fnlAStrpneu_1_1	R
2050	fnlBStrpneu_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
2051	fnlBStrpneu_1_1	R
2052	fnlCStrpneu_1_1	F
2053	fnlCStrpneu_1_1	R
2054	gct18Strpneum_1_1	F
2055	gct18Strpneum_1_1	R
2056	hexB1_1_1	F
2057	hexB1_1_1	R
2058	hftsHstrpneu_1_1	F
2059	hftsHstrpneu_1_1	R
2060	immunofrag1Strpneu_1_1	F
2061	immunofrag1Strpneu_1_1	R
2062	immunofrag2Strpneu_2_1	F
2063	immunofrag2Strpneu_2_1	R
2064	immunofrag3Strpneu_2_1	F
2065	immunofrag3Strpneu_2_1	R
2066	kdtBStrpneu_1_1	F
2067	kdtBStrpneu_1_1	R
2068	lysAStrpneu_1_1	F
2069	lysAStrpneu_1_1	R
2070	pcpBStrpneu_1_1	F
2071	pcpBStrpneu_1_1	R
2072	pflCStrpneu_1_1	F
2073	pflCStrpneu_1_1	R
2074	plpA_1_1	F
2075	plpA_1_1	R
2076	prtA1 Strpneu_1_1	F
2077	prtA1 Strpneu_1_1	R
2078	pspC1Strpneu_1_1	F
2079	pspC1Strpneu_1_1	R
2080	pspC2_1_1	F
2081	pspC2_1_1	R
2082	purRStrpneu_1_1	F
2083	purRStrpneu_1_1	R
2084	pyrDAStrpneum_1_1	F
2085	pyrDAStrpneum_1_1	R
2086	SP0828Strpneu_1_1	F
2087	SP0828Strpneu_1_1	R
2088	SP0830Strpneu_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
2089	SP0830Strpneu_1_1	R
2090	SP0833Strpneu_1_1	F
2091	SP0833Strpneu_1_1	R
2092	SP0837_38Strpneu_1_1	F
2093	SP0837_38Strpneu_1_1	R
2094	SP0839Strpneu_1_1	F
2095	SP0839Strpneu_1_1	R
2096	ugdStrpneu_1_1	F
2097	ugdStrpneu_1_1	R
2098	uncC_1_1	F
2099	uncC_1_1	R
2100	vicXStrepneu_1_1	F
2101	vicXStrepneu_1_1	R
2102	wchA6bStrpneum_1_1	F
2103	wchA6bStrpneum_1_1	R
2104	wci4Strpneum_1_1	F
2105	wci4Strpneum_1_1	R
2106	wciK4Strpneum_1_1	F
2107	wciK4Strpneum_1_1	R
2108	wciL4Strpneum_1_1	F
2109	wciL4Strpneum_1_1	R
2110	wciN6bStrpneum_1_1	F
2111	wciN6bStrpneum_1_1	R
2112	wciO6bStrpneum_1_1	F
2113	wciO6bStrpneum_1_1	R
2114	wciP6bStrpneum_1_1	F
2115	wciP6bStrpneum_1_1	R
2116	wciY18Strpneum_1_1	F
2117	wciY18Strpneum_1_1	R
2118	wzdbStrpneum_1_1	F
2119	wzdbStrpneum_1_1	R
2120	wze6bStrpneum_1_1	F
2121	wze6bStrpneum_1_1	R
2122	wzy18Strpneum_1_1	F
2123	wzy18Strpneum_1_1	R
2124	wzy4Strpneum_1_1	F
2125	wzy4Strpneum_1_1	R
2126	wzy6bStrpneum_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
2127	wzy6bStrpneum_1_1	R
2128	xpt_1_1	F
2129	xpt_1_1	R
2130	igaStrpneu_1_1	F
2131	igaStrpneu_1_1	R
2132	lytA_1_1	F
2133	lytA_1_1	R
2134	nanA_1_1	F
2135	nanA_1_1	R
2136	nanBStrpneu_1_1	F
2137	nanBStrpneu_1_1	R
2138	pcpCStrpneu_1_1	F
2139	pcpCStrpneu_1_1	R
2140	ply_1_1	F
2141	ply_1_1	R
2142	prtAStrpneu_1_1	F
2143	prtAStrpneu_1_1	R
2144	pspA_1_2	F
2145	pspA_1_2	R
2146	SP0834Strpneu_1_1	F
2147	SP0834Strpneu_1_1	R
2148	SP0834Strpneu_1_2	F
2149	SP0834Strpneu_1_2	R
2150	sphtraStrpneu_1_1	F
2151	sphtraStrpneu_1_1	R
2152	wciJStrpneu_1_1	F
2153	wciJStrpneu_1_1	R
2154	wziyStrpneu_1_1	F
2155	wziyStrpneu_1_1	R
2156	wzxStrpneu_1_1	F
2157	wzxStrpneu_1_1	R
2158	cpsA1Strgal_1_1	F
2159	cpsA1Strgal_1_1	R
2160	cpsB1Strgal_1_1	F
2161	cpsB1Strgal_1_1	R
2162	cpsC1Strgal_1_1	F
2163	cpsC1Strgal_1_1	R
2164	cpsD1Strgal_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
2165	cpsD1Strgal_1_1	R
2166	cpsE1Strgal_1_1	F
2167	cpsE1Strgal_1_1	R
2168	cpsG1Strgal_1_1	F
2169	cpsG1Strgal_1_1	R
2170	cpsI1Strgal_1_1	F
2171	cpsI1Strgal_1_1	R
2172	cpsJ1Strgal_1_1	F
2173	cpsJ1Strgal_1_1	R
2174	cpsK1Strgal_1_1	F
2175	cpsK1Strgal_1_1	R
2176	cpsM1Strgal_1_1	F
2177	cpsM1Strgal_1_1	R
2178	cpsY1Strgal_1_1	F
2179	cpsY1Strgal_1_1	R
2180	cpsY2Strgal_2_1	F
2181	cpsY2Strgal_2_1	R
2182	cylB1Straga_1_1	F
2183	cylB1Straga_1_1	R
2184	cylE1Straga_1_1	F
2185	cylE1Straga_1_1	R
2186	cylF1Straga_1_1	F
2187	cylF1Straga_1_1	R
2188	cylH1Straga_1_1	F
2189	cylH1Straga_1_1	R
2190	cylI1Straga_1_1	F
2191	cylI1Straga_1_1	R
2192	cylJ1Straga_1_1	F
2193	cylJ1Straga_1_1	R
2194	cylK1Straga_1_1	F
2195	cylK1Straga_1_1	R
2196	0487Straga_1_1	F
2197	0487Straga_1_1	R
2198	0488Straga_1_1	F
2199	0488Straga_1_1	R
2200	0493Straga_1_1	F
2201	0493Straga_1_1	R
2202	0495Straga_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
2203	0495Straga_1_1	R
2204	0498Straga_1_1	F
2205	0498Straga_1_1	R
2206	0500Straga_1_1	F
2207	0500Straga_1_1	R
2208	0502Straga_1_1	F
2209	0502Straga_1_1	R
2210	0504Straga_1_1	F
2211	0504Straga_1_1	R
2212	folDStraga_1_1	F
2213	folDStraga_1_1	R
2214	neuA1Strgal_1_1	F
2215	neuA1Strgal_1_1	R
2216	neuB1Strgal_1_1	F
2217	neuB1Strgal_1_1	R
2218	neuC1Strgal_1_1	F
2219	neuC1Strgal_1_1	R
2220	neuD1Strgal_1_1	F
2221	neuD1Strgal_1_1	R
2222	recNStraga_1_1	F
2223	recNStraga_1_1	R
2224	ileSStraga_1_1	F
2225	ileSStraga_1_1	R
2226	CAMPfactor_1_1	F
2227	CAMPfactor_1_1	R
2228	CAMPfactor_2_1	F
2229	CAMPfactor_2_1	R
2230	0499Straga_1_1	F
2231	0499Straga_1_1	R
2232	hylStragal_1_1	F
2233	hylStragal_1_1	R
2234	lipStragal_1_1	F
2235	lipStragal_1_1	R
2236	cyclStrpyog_1_1	F
2237	cyclStrpyog_1_1	R
2238	fah_rph_hlo_Strpyog_1_1	F
2239	fah_rph_hlo_Strpyog_1_1	R
2240	int_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
2241	int_1_1	R
2242	int315.5_1_1	F
2243	int315.5_1_1	R
2244	murEStrpyog_1_1	F
2245	murEStrpyog_1_1	R
2246	oppA_1_1	F
2247	oppA_1_1	R
2248	oppCStrpyog_1_1	F
2249	oppCStrpyog_1_1	R
2250	oppD_1_1	F
2251	oppD_1_1	R
2252	SPy0382Strpyog_1_1	F
2253	SPy0382Strpyog_1_1	R
2254	SPy0390Strpyog_1_1	F
2255	SPy0390Strpyog_1_1	R
2256	SpyM3_1351_1_1	F
2257	SpyM3_1351_1_1	R
2258	vicXStrpyog_1_1	F
2259	vicXStrpyog_1_1	R
2260	DNaseIStrpyog_1_1	F
2261	DNaseIStrpyog_1_1	R
2262	fba2Strpyog_1_1	F
2263	fba2Strpyog_1_1	R
2264	fhuAStrpyog_1_1	F
2265	fhuAStrpyog_1_1	R
2266	fhuB1Strpyog_1_1	F
2267	fhuB1Strpyog_1_1	R
2268	fhuDStrpyog_1_1	F
2269	fhuDStrpyog_1_1	R
2270	fhuGStrpyog_1_1	F
2271	fhuGStrpyog_1_1	R
2272	hylA_1_1	F
2273	hylA_1_1	R
2274	hylP_1_1	F
2275	hylP_1_1	R
2276	hylp2_1_1	F
2277	hylp2_1_1	R
2278	oppB_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
2279	oppB_1_1	R
2280	ropB_1_1	F
2281	ropB_1_1	R
2282	scpAStrpyog_1_1	F
2283	scpAStrpyog_1_1	R
2284	sloStrpyog_1_1	F
2285	sloStrpyog_1_1	R
2286	smez-4Strpyog_1_1	F
2287	smez-4Strpyog_1_1	R
2288	sof_1_1	F
2289	sof_1_1	R
2290	sof_2_1	F
2291	sof_2_1	R
2292	speA_1_1	F
2293	speA_1_1	R
2294	speB2Strpyog_1_1	F
2295	speB2Strpyog_1_1	R
2296	speCStrpyog_1_1	F
2297	speCStrpyog_1_1	R
2298	speJStrpyog_1_1	F
2299	speJStrpyog_1_1	R
2300	srtBStrpyog_1_1	F
2301	srtBStrpyog_1_1	R
2302	srtCStrpyog_1_1	F
2303	srtCStrpyog_1_1	R
2304	srtEStrpyog_1_1	F
2305	srtEStrpyog_1_1	R
2306	srtFStrpyog_1_1	F
2307	srtFStrpyog_1_1	R
2308	srtGStrpyog_1_1	F
2309	srtGStrpyog_1_1	R
2310	srtIStrpyog_1_1	F
2311	srtIStrpyog_1_1	R
2312	srtKStrpyog_1_1	F
2313	srtKStrpyog_1_1	R
2314	srtRStrpyog_1_1	F
2315	srtRStrpyog_1_1	R
2316	srtTStrpyog_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
2317	srtTStrpyog_1_1	R
2318	vicKStrpyog_1_1	F
2319	vicKStrpyog_1_1	R
2320	573Stprmut_1_1	F
2321	573Stprmut_1_1	R
2322	580SSstprmut_1_1	F
2323	580SSstprmut_1_1	R
2324	581_582SSstprmut_1_1	F
2325	581_582SSstprmut_1_1	R
2326	584SSstprmut_1_1	F
2327	584SSstprmut_1_1	R
2328	dltAStrmut_1_1	F
2329	dltAStrmut_1_1	R
2330	dltBStrmut_1_1	F
2331	dltBStrmut_1_1	R
2332	dltCpx1Strmut_1_1	F
2333	dltCpx1Strmut_1_1	R
2334	dltDStrmut_1_1	F
2335	dltDStrmut_1_1	R
2336	lichStrbov_1_1	F
2337	lichStrbov_1_1	R
2338	lytRStprmut_1_1	F
2339	lytRStprmut_1_1	R
2340	lytSSstprmut_1_1	F
2341	lytSSstprmut_1_1	R
2342	pepQStrmut_1_1	F
2343	pepQStrmut_1_1	R
2344	pflCStrmut_1_1	F
2345	pflCStrmut_1_1	R
2346	recNStprmut_1_1	F
2347	recNStprmut_1_1	R
2348	ytqBStrmut_1_1	F
2349	ytqBStrmut_1_1	R
2350	hlyXStrmut_1_1	F
2351	hlyXStrmut_1_1	R
2352	igaStrmitis_1_1	F
2353	igaStrmitis_1_1	R
2354	igaStrsanguis_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
2355	igaStrsanguis_1_1	R
2356	perMStrmut_1_1	F
2357	perMStrmut_1_1	R
2358	atfA_1_1	F
2359	atfA_1_1	R
2360	atfB_1_1	F
2361	atfB_1_1	R
2362	atfC_1_1	F
2363	atfC_1_1	R
2364	ccmPrmi1_1_1	F
2365	ccmPrmi1_1_1	R
2366	cyaPrmi_1_1	F
2367	cyaPrmi_1_1	R
2368	aad_1_1	F
2369	aad_1_1	R
2370	flfB_1_1	F
2371	flfB_1_1	R
2372	flfD_1_1	F
2373	flfD_1_1	R
2374	flfN_1_1	F
2375	flfN_1_1	R
2376	flhD_1_1	F
2377	flhD_1_1	R
2378	floA_1_1	F
2379	floA_1_1	R
2380	ftsK_1_1	F
2381	ftsK_1_1	R
2382	gstB_1_1	F
2383	gstB_1_1	R
2384	hemCPrmi_1_1	F
2385	hemCPrmi_1_1	R
2386	hemDPrmi_1_1	F
2387	hemDPrmi_1_1	R
2388	hev_1_1	F
2389	hev_1_1	R
2390	katA_1_1	F
2391	katA_1_1	R
2392	lpp1_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
2393	lpp1_1_1	R
2394	menE_1_1	F
2395	menE_1_1	R
2396	mfd_1_1	F
2397	mfd_1_1	R
2398	nrpA_1_1	F
2399	nrpA_1_1	R
2400	nrpB_1_1	F
2401	nrpB_1_1	R
2402	nrpG_1_1	F
2403	nrpG_1_1	R
2404	nrpS_1_1	F
2405	nrpS_1_1	R
2406	nrpT_1_1	F
2407	nrpT_1_1	R
2408	nrpU_1_1	F
2409	nrpU_1_1	R
2410	pat_1_1	F
2411	pat_1_1	R
2412	pmfA_1_1	F
2413	pmfA_1_1	R
2414	pmfC_1_1	F
2415	pmfC_1_1	R
2416	pmfE_1_1	F
2417	pmfE_1_1	R
2418	ppaA_1_1	F
2419	ppaA_1_1	R
2420	rsbA_1_1	F
2421	rsbA_1_1	R
2422	rsbC_1_1	F
2423	rsbC_1_1	R
2424	speB_1_1	F
2425	speB_1_1	R
2426	stmA_1_1	F
2427	stmA_1_1	R
2428	stmB_1_1	F
2429	stmB_1_1	R
2430	terA_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
2431	terA_1_1	R
2432	terD_1_1	F
2433	terD_1_1	R
2434	umoA_1_1	F
2435	umoA_1_1	R
2436	umoB_1_1	F
2437	umoB_1_1	R
2438	umoC_1_1	F
2439	umoC_1_1	R
2440	ureR_1_1	F
2441	ureR_1_1	R
2442	xerC_1_1	F
2443	xerC_1_1	R
2444	ygbA_1_1	F
2445	ygbA_1_1	R
2446	flaA_1_1	F
2447	flaA_1_1	R
2448	flaD_1_1	F
2449	flaD_1_1	R
2450	fliA_1_1	F
2451	fliA_1_1	R
2452	hpmA_1_1	F
2453	hpmA_1_1	R
2454	hpmB_1_1	F
2455	hpmB_1_1	R
2456	lpsPrmi_1_1	F
2457	lpsPrmi_1_1	R
2458	mrpA_1_1	F
2459	mrpA_1_1	R
2460	mrpB_1_1	F
2461	mrpB_1_1	R
2462	mrpC_1_1	F
2463	mrpC_1_1	R
2464	mrpD_1_1	F
2465	mrpD_1_1	R
2466	mrpE_1_1	F
2467	mrpE_1_1	R
2468	mrpF_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
2469	mrpF_1_1	R
2470	mrpG_1_1	F
2471	mrpG_1_1	R
2472	mrpH_1_1	F
2473	mrpH_1_1	R
2474	mrpI_1_1	F
2475	mrpI_1_1	R
2476	mrpJ_1_1	F
2477	mrpJ_1_1	R
2478	patA_1_1	F
2479	patA_1_1	R
2480	putA_1_1	F
2481	putA_1_1	R
2482	uca_1_1	F
2483	uca_1_1	R
2484	ureDPrmi_1_1	F
2485	ureDPrmi_1_1	R
2486	ureEPrmi_1_1	F
2487	ureEPrmi_1_1	R
2488	ureFPrmi_1_1	F
2489	ureFPrmi_1_1	R
2490	zapA_1_1	F
2491	zapA_1_1	R
2492	zapB_1_1	F
2493	zapB_1_1	R
2494	zapD_1_1	F
2495	zapD_1_1	R
2496	zapE_1_1	F
2497	zapE_1_1	R
2498	envZPrvu_1_1	F
2499	envZPrvu_1_1	R
2500	frdC_1_1	F
2501	frdC_1_1	R
2502	frdD_1_1	F
2503	frdD_1_1	R
2504	infBPrvu_1_1	F
2505	infBPrvu_1_1	R
2506	lad_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
2507	lad_1_1	R
2508	tna2_1_1	F
2509	tna2_1_1	R
2510	end_1_1	F
2511	end_1_1	R
2512	pqrA_1_1	F
2513	pqrA_1_1	R
2514	urg_1_1	F
2515	urg_1_1	R
2516	blaIMP-7_1_1	F
2517	blaIMP-7_1_1	R
2518	meclSepid_1_1	F
2519	meclSepid_1_1	R
2520	blaOXA-10_1_2	F
2521	blaOXA-10_1_2	R
2522	blaB_1_1	F
2523	blaB_1_1	R
2524	ampC_1_1	F
2525	ampC_1_1	R
2526	I-blaR_1_1	F
2527	I-blaR_1_1	R
2528	blaOXA- 32_1_1	F
2529	blaOXA- 32_1_1	R
2530	bla-CTX-M-22_1_1	F
2531	bla-CTX-M-22_1_1	R
2532	pbp2aStrpneu_1_1	F
2533	pbp2aStrpneu_1_1	R
2534	blaSHV-1_1_1	F
2535	blaSHV-1_1_1	R
2536	blaOXA- 2_1_1	F
2537	blaOXA-2_1_12_1_1	R
2538	blaRShaemolyt_1_1	F
2539	blaRShaemolyt_1_1	R
2540	blaIMP-7_1_2	F
2541	blaIMP-7_1_2	R
2542	I-mecR_1_1	F
2543	I-mecR_1_1	R
2544	blaOXY_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
2545	blaOXY_1_1	R
2546	dacCStrpyog_1_1	F
2547	dacCStrpyog_1_1	R
2548	femA_1_1	F
2549	femA_1_1	R
2550	mecA_1_1	F
2551	mecA_1_1	R
2552	blaShaemolyt_1_1	F
2553	blaShaemolyt_1_1	R
2554	blavim_1_1	F
2555	blavim_1_1	R
2556	pbp2b_1_1	F
2557	pbp2b_1_1	R
2558	pbp2primeSepid_1_1	F
2559	pbp2primeSepid_1_1	R
2560	pbp2x_1_1	F
2561	pbp2x_1_1	R
2562	pbp3Saureuc_1_1	F
2563	pbp3Saureuc_1_1	R
2564	pbp4_1_1	F
2565	pbp4_1_1	R
2566	pbp5Efaecium_1_1	F
2567	pbp5Efaecium_1_1	R
2568	pbpC_1_1	F
2569	pbpC_1_1	R
2570	l-mecI_1_1	F
2571	l-mecI_1_1	R
2572	pbp1a_1_1	F
2573	pbp1a_1_1	R
2574	l-blaI_1_1	F
2575	l-blaI_1_1	R
2576	blaTEM-106_1_1	F
2577	blaTEM-106_1_1	R
2578	blaOXY-KLOX_1_1	F
2579	blaOXY-KLOX_1_1	R
2580	ftsWEF_1_1	F
2581	ftsWEF_1_1	R
2582	fmhB_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
2583	fmhB_1_1	R
2584	cumA_1_1	F
2585	cumA_1_1	R
2586	femBShaemolyt_1_1	F
2587	femBShaemolyt_1_1	R
2588	blaPER-1_1_1	F
2589	blaPERI-1_1_1	R
2590	bla_FOX-3_1_1	F
2591	bla_FOX-3_1_1	R
2592	blaA_1_1	F
2593	blaA_1_1	R
2594	psrb_1_1	F
2595	Psrb_1_1	R
2596	fmhA_1_1	F
2597	fmhA_1_1	R
2598	mecR1Sepid_1_1	F
2599	mecR1Sepid_1_1	R
2600	blaZ_1_1	F
2601	blaZ_1_1	R
2602	blaOXA-1_1_1	F
2603	blaOXA-1_1_1	R
2604	fox-6_1_1	F
2605	fox-6_1_1	R
2606	blaPrmi_1_1	F
2607	blaPrmi_1_1	R
2608	aacA_aph DStwar_1_1	F
2609	aacA_aphDStwar_1_1	R
2610	aacC1_1_2	F
2611	aacC1_1_2	R
2612	aacC2_1_1	F
2613	aacC2_1_1	R
2614	strB_1_1	F
2615	strB_1_1	R
2616	aadA_1_1	F
2617	aadA_1_1	R
2618	aadB_1_2	F
2619	aadB_1_2	R
2620	aadD_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
2621	aadD_1_1	R
2622	aacA4_1_2	F
2623	aacA4_1_2	R
2624	strA_1_1	F
2625	strA_1_1	R
2626	aph-A3_1_1	F
2627	aph-A3_1_1	R
2628	aacC1_1_1	F
2629	aacC1_1_1	R
2630	aacA4_1_1	F
2631	aacA4_1_1	R
2632	aacA-aphD_1_1	F
2633	aacA-aphD_1_1	R
2634	l-spc_1_1	F
2635	l-spc_1_1	R
2636	aphA3_1_1	F
2637	aphA3_1_1	R
2638	ermC_1_1	F
2639	ermC_1_1	R
2640	linB_1_1	F
2641	linB_1_1	R
2642	satSA_1_1	F
2643	satSA_1_1	R
2644	mdrSA_1_1	F
2645	mdrSA_1_1	R
2646	l-linA_1_1	F
2647	l-linA_1_1	R
2648	ermB_1_2	F
2649	ermB_1_2	R
2650	ermA_1_1	F
2651	ermA_1_1	R
2652	satA_1_1	F
2653	satA_1_1	R
2654	msrA_1_1	F
2655	msrA_1_1	R
2656	mphBM_1_1	F
2657	mphBM_1_1	R
2658	mefA_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
2659	mefA_1_1	R
2660	mxr_1_1	F
2661	mxr_1_1	R
2662	dfrStrpneu_1_1	F
2663	dfrStrpneu_1_1	R
2664	dfrA_1_1	F
2665	dfrA_1_1	R
2666	cmIA5_1_1	F
2667	cmIA5_1_1	R
2668	catEfaecium_1_1	F
2669	catEfaecium_1_1	R
2670	cat_1_1	F
2671	cat_1_1	R
2672	tetAJ_1_1	F
2673	tetAJ_1_1	R
2674	tetL_1_1	F
2675	tetL_1_1	R
2676	tetM_1_1	F
2677	tetM_1_1	R
2678	vanH(tn)_1_1	F
2679	vanH(tn)_1_1	R
2680	vanA_1_1	F
2681	vanA_1_1	R
2682	vanHB2_1_1	F
2683	vanHB2_1_1	R
2684	vanR_1_1	F
2685	vanR_1_1	R
2686	vanRB2_1_1	F
2687	vanRB2_1_1	R
2688	vanS(tn)_1_1	F
2689	vanS(tn)_1_1	R
2690	vanSB2_1_1	F
2691	vanSB2_1_1	R
2692	vanWB2_1_1	F
2693	vanWB2_1_1	R
2694	ddl_1_1	F
2695	ddl_1_1	R
2696	ble_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
2697	ble_1_1	R
2698	vanXB2_1_1	F
2699	vanXB2_1_1	R
2700	vanY(tn)_1_1	F
2701	vanY(tn)_1_1	R
2702	vanYB2_1_1	F
2703	vanYB2_1_1	R
2704	vanB_1_1	F
2705	vanB_1_1	R
2706	vanZ(tn)_1_1	F
2707	vanZ(tn)_1_1	R
2708	vanC-2_1_1	F
2709	vanC-2_1_1	R
2710	vanX(tn)_1_1	F
2711	vanX(tn)_1_1	R
2712	acrB_1_1	F
2713	acrB_1_1	R
2714	mexB_1_2	F
2715	mexB_1_2	R
2716	l-qacA_1_1	F
2717	l-qacA_1_1	R
2718	sull_1_1	F
2719	sull_1_1	R
2720	sul_1_1	F
2721	sul_1_1	R
2722	cadBStalugd_1_1	F
2723	cadBStalugd_1_1	R
2724	mexA_1_1	F
2725	mexA_1_1	R
2726	acrR_1_1	F
2727	acrR_1_1	R
2728	emeA_1_1	F
2729	emeA_1_1	R
2730	acrA_1_1	F
2731	acrA_1_1	R
2732	rtn_1_1	F
2733	rtn_1_1	R
2734	abcXStrpmut_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
2735	abcXStrpmut_1_1	R
2736	qacEdelta1_1_1	F
2737	qacEdelta1_1_1	R
2738	elkT-abcA_1_1	F
2739	elkT-abcA_1_1	R
2740	l-cadA_1_1	F
2741	l-cadA_1_1	R
2742	albA_1_1	F
2743	albA_1_1	R
2744	wzm_1_1	F
2745	wzm_1_1	R
2746	msrCb_1_1	F
2747	msrCb_1_1	R
2748	nov_1_1	F
2749	nov_1_1	R
2750	wzt_1_1	F
2751	wzt_1_1	R
2752	wbbI_1_1	F
2753	wbbI_1_1	R
2754	norA23_1_1	F
2755	norA23_1_1	R
2756	mexR_1_1	F
2757	mexR_1_1	R
2758	arr2_1_1	F
2759	arr2_1_1	R
2760	mreA_1_1	F
2761	mreA_1_1	R
2762	l-cadC_1_1	F
2763	l-cadC_1_1	R
2764	uvrA_1_1	F
2765	uvrA_1_1	R
2766	CRD2_1_1	F
2767	CRD2_1_1	R
2768	CDR1_1_1	F
2769	CDR1_1_1	R
2770	CDR1_2_1	F
2771	CDR1_2_1	R
2772	MET3_1_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
2773	MET3_1_1	R
2774	FET3_1_1	F
2775	FET3_1_1	R
2776	FTR2_1_1	F
2777	FTR2_1_1	R
2778	MDR1-7_1_1	F
2779	MDR1-7_1_1	R
2780	ERG11_1_1	F
2781	ERG11_1_1	R
2782	SEC20_1_1	F
2783	SEC20_1_1	R
2784	rbcL_1_1	F
2785	rbcL_1_1	R
2786	LDHA(hu)_1_1	F
2787	LDHA(hu)_1_1	R
2788	GAPD(hu)_1_1	F
2789	GAPD(hu)_1_1	R
2790	b-Act(hu)_1_1	F
2791	b-Act(hu)_1_1	R
2792	ARHGDIA(hu)_1_1	F
2793	ARHGDIA(hu)_1_1	R
2794	PGK1(hu)_1_1	F
2795	PGK1(hu)_1_1	R
2796	rbcL_1_2	F
2797	rbcL_1_2	R
2798	16SPa_1_1	F
2799	16SPa_1_1	R
2800	23SEfaecium_2_1	F
2801	23SEfaecium_2_1	R
2802	16SStrepyog_1_1	F
2803	16SStrepyog_1_1	R
2804	16SStrepneu_1_1	F
2805	16SStrepneu_1_1	R
2806	16SStrepagalactiae_1_1	F
2807	16SStrepagalactiae_1_1	R
2808	16SEfaecium_1_1	F
2809	16SEfaecium_1_1	R
2810	16SEfaecium_2_1	F

EP 1 770 171 A1

(continued)

5

10

15

20

25

30

35

40

45

50

55

SEQ ID NO	Probe name	Direction
2811	16SEfaecium_2_1	R
2812	16SRNAEf_2_1	F
2813	16SRNAEf_2_1	R
2814	16SKpn_1_1	F
2815	16SKpn_1_1	R
2816	16SSa_3_1	F
2817	16SSa_3_1	R
2818	16SRNAEf_1_1	F
2819	16SRNAEf_1_1	R
2820	16SShominis_1_1	F
2821	16SShominis_1_1	R
2822	16SShaemolyt_1_1	F
2823	16SShaemolyt_1_1	R
2824	23SEfaecium_1_1	F
2825	23SEfaecium_1_1	R
2826	16SrRNAPrmi_1_1	F
2827	16SrRNAPrmi_1_1	R
2828	16SrRNAPrvu1_1_1	F
2829	16SrRNAPrvu1_1_1	R
2830	16SSa_1_1	F
2831	16SSa_1_1	R
2832	16SKlox_1_1	F
2833	16SKlox_1_1	R
2834	p53_1_1	F
2835	p53_1_1	R
2836	0135mihck_1_1	F
2837	0135mihck_1_1	R
2838	FAN_1_1	F
2839	FAN_1_1	R
2840	0270cap_1_1	F
2841	0270cap_1_1	R

EP 1 770 171 A1

SEQUENCE LISTING

<110> Universität zu Köln

5 <120> DNA microarray for rapid identification of pathogens in blood cultures

<130> 050565ep

10 <160> 2841

<170> PatentIn version 3.3

<210> 1

<211> 220

15 <212> DNA

<213> Staphylococcus aureus

<400> 1

taaattgttt agattacaat cagaggacgc taaagaaaga atttttacaa atacagcaaa 60

20 tgcaatggaa ggcgtaacgg atgatgttaa acgacgtcat attcgtcatt gttacaaagc 120

tgaccagaa tatggtaaag gtgttgcaaa agcattaggt attgatataa attctattga 180

tcttgaaaact gaaaatgatg aaacatacga aaactttgaa 220

25 <210> 2

<211> 543

<212> DNA

<213> Staphylococcus aureus

30 <400> 2

cgtgtttggg ttaaattcca ttttagaacg caacaaggta ttgaaaactt aactgatgaa 60

gaagctgctg aaattatagc tacagatcgt gattcatctc aacgcgattt attcgaagcc 120

35 attgaaaaag gtgattatcc aaaatggaca atgtatatcc aagtaatgac tgaggaacaa 180

gctaaaaacc ataaagataa tccatttgat ttaacaaaag tatggatatca cgatgagtat 240

cctctaattg aagttggaga gtttgaatta aatagaaatc cagataatta ctttacggat 300

40 gttgaacaag ctgcgtttgc accaactaat attattccag gattagattt ttctccagac 360

aaaatgctgc aagggcgttt attotcatat ggcgatgcgc aaagatatcg attaggagtt 420

aatcattggc agattoctgt aaaccaacct aaagggtgtg gtattgaaaa tatttgtcct 480

45 tttagtagag atggtcaaat gcgcgtagtt gacaataacc aagggtggagg aacacaccat 540

tat 543

50 <210> 3

<211> 701

<212> DNA

<213> Staphylococcus aureus

<400> 3

55 aaaagaaaa cacgcaattc ggaaaaatc gattggcgtg gcttcagtgc ttgtaggtac 60

EP 1 770 171 A1

gtttaatcgggt tttggactac tcagcagtaa agaagcagat gcaagtgaaa atagtgttac 120
 gcaatctgat agcgcaagta acgaaagcaa aagtaatgat tcaagtagcg ttagtgctgc 180
 5 acctaaaaca gacgacacaa acgtgagtga tactaaaaca tcgtcaaaca ctaataatgg 240
 cgaaaacgagt gtggcgcaaa atccagcaca acaggaaacg acacaatcat catcaacaaa 300
 tgcaactacg gaagaaacgc cggttaactgg tgaagctact actacgacaa cgaatcaagc 360
 10 taatacaccg gcaacaactc aatcaagcaa tacaatgcg gaggaattag tgaatcaaac 420
 aagtaatgaa acgactttta atgatactaa tacagtatca tctgtaaatt cacctcaaaa 480
 ttctacaaat gcggaaaatg tttcaacaac gcaagatact tcaactgaag caacaccttc 540
 15 aaacaatgaa tcagctccac agagtacaga tgcaagtaat aaagatgtag ttaatcaagc 600
 ggtaataca agtgcgccta gaatgagagc atttagttta gcggcagtag ctgcagatgc 660
 accggcagct ggcacagata ttacgaatca gttgacgaat g 701
 20
 <210> 4
 <211> 700
 <212> DNA
 <213> Staphylococcus aureus
 25
 <400> 4
 tagcatagca acaaacagtg agcttaaaaa ttctcaaaca ttagatttac cacaatcatc 60
 accacaaacg atttccaatg cgcaaggaac tagtaaacca agtgtagtaa cgagagctgt 120
 30 acgtagttta gctgttgctg aaccggtagt aaatgctgct gatgctaaag gtacaaatgt 180
 aaatgataaa gttacggcaa gtaatttcaa gttagaaaag actacatttg accctaataca 240
 aagtggtaac acatttatgg cggcaaattt tacagtgaca gataaagtga aatcagggga 300
 35 ttattttaca gcgaagttac cagatagttt aactggtaat ggagacgtgg attattctaa 360
 ttcaataaat acgatgccaa ttgcagacat taaaagtagc aatggcgatg ttgtagctaa 420
 agcaacatat gatatttga ctaagacgta tacatttgtc ttacagatt atgtaaataa 480
 40 taaagaaaat attaacggac aattttcatt acctttattt acagaccgag caaaggcacc 540
 taaatcagga acatatgatg cgaatattaa tattgcgat gaaatgttta ataataaat 600
 45 tacttataac tatagttcgc caattgcagg aattgataaa ccaaattggcg cgaacatttc 660
 ttctcaaatt attggtgtag atacagcttc aggtcaaaac 700
 <210> 5
 <211> 635
 <212> DNA
 <213> Staphylococcus aureus
 50
 <400> 5
 aacaaagcag atgcgatagt aacaaaggat tatagcaaag agtcaagagt gaatgagaac 60
 55 agtaaatatg ggacattaat ttcagactgg tattttaaag ggagattaac tagtctagaa 120

EP 1 770 171 A1

	tctcaattta tcaatgcatt ggatatttta gagacatatc attatggcga aaaagagtat	180
5	aaagatgcaa aagataaatt gatgacaaga attttagggg aagaccaata ctttttagaa	240
	agaaaaaaag tgcagtatga ggaatacaaa aaattatacc aaaaatataa agaagagaat	300
	ccaacctcta aaggcttaaa actgaaaaca ttogatcaat atacaataga agatttaact	360
10	atgagggaat ataatgagtt aacagaatca ttaaaaagtg ctgtaaaaga ctttgagaaa	420
	gatgttgaaa aaatagaaaa tcaacatcat gatttgaaac catttactga tgaaatggaa	480
	gagaaggcta cttctagagt tgatgattta gcaaataaag catatagtgt ttattttgca	540
15	tttgtagggg atacacaaca taaaactgag gcattagagt taaaagcgaa agtagattta	600
	gttttaggtg atgaggataa accgcacgtg atttc	635
20	<210> 6 <211> 532 <212> DNA <213> Staphylococcus aureus	
25	<400> 6 ctaggcgcgt tagcagttgc atctagctta tttacatggg ataacaaagc agatgcgata	60
	gtaacaaagg attatagcaa agagtcaaga gtgaatgaga acagtaaata tgggacatta	120
	atctcagact ggtattttaa agggagatta actagtctag aatctcaatt tatcaatgca	180
30	ttggatattt tagagacata tcattatggc gaaaaagagt ataaagatgc aaaagataaa	240
	ttgatgacaa gaatttttagg ggaagaccaa taccttttag aaagaaaaaa agtgcagtat	300
	gaggaatata aaaaattata ccaaaaatat aaagaagaga atccaacctc taaaggctta	360
35	aaactgaaaa cattcgatca atatacaata gaagatttaa ctatgaggga atataatgag	420
	ttaacagaat cattaaaaag tgctgtaaaa gactttgaga aagatgttga aaaaatagaa	480
	aatcaacatc atgatttgaa accatttact gatgaaatgg aagagaaggc ta	532
40	<210> 7 <211> 268 <212> DNA <213> Staphylococcus aureus	
45	<400> 7 aatgctgcta acctgcgtga taaacaaaca aaacttgaaa agcaatatga agaagctaaa	60
	aatgaatgga agaatgcaca aaatggcatg tcaacttcat tgtcagaaga agatattgct	120
50	gaagttattg caggatggac aggtatccca ttaactaaaa tcaatgaaac agaattctgaa	180
	aaacttctta gtctagaaga tacattacat gagagagtta ttgggcaaaa agatgctgtt	240
	aattcaatca gtaaagcggt tagacgtg	268
55	<210> 8	

EP 1 770 171 A1

<211> 321
 <212> DNA
 <213> Staphylococcus aureus

5 <400> 8
 aaagtaaaga gtagactaag cagtctgctc tttttgtatg agtaaaccga ggtgtcaata 60
 aattgtttac tatactttga gcggaaatat gattgaatga agctagttga accgtaacta 120
 10 tatgaaatgt tcccttcaaa gtagacattg aaaggaacat ttcaatcctt tgtttgtaag 180
 tcgctctaga cattacattt agtacatatg ttgtttctaa tgcctattaa tggattgat 240
 tattctttta ttaaactctt aagtgccatt tttaaattac tatatttaaa ttggaatccc 300
 15 aatgcttgaa ttttattagg t 321

<210> 9
 <211> 350
 <212> DNA
 20 <213> Staphylococcus aureus

<400> 9
 aagaatttaa aatgggttagg tgcgtagca acgttaatga tgacatttgt acaacttggt 60
 25 ggagccttag ttacaaaac cggatcagct gatgggttg gttcttcttg gccactatgt 120
 catggtgctg tgattccaga attctttcct attgatacga ttattgagtt aagtcataga 180
 gccgtttcag ctttgtcttt attaatggtc ttatgggttag ttatcactgc atggaaacat 240
 30 ataggctata ttaaagaaat taaaccttta tcaatcatta gtgttggtt cttattattg 300
 caagcattaa tcggagctgc tgctgttatt tggcaacaaa acgattacgt 350

<210> 10
 35 <211> 357
 <212> DNA
 <213> Staphylococcus aureus

<400> 10
 40 aacgtcccat accattaatt ttagaaatta agaatcctaa aacattaatg attaaaggta 60
 aaatctttgt gtattgaagg ataccgataa tcgctgaaat aaatacgata ggtaataata 120
 cactgaagaa gaatggtggt tgcttaggat cgatatattg aataccaccg aatacaaagt 180
 45 taacaccatc tgctgctttt aataataagt agttaaacc gtttgaaata ccaccaataa 240
 ccttgattcc cattgtagtt ttaagcaaga taaatgcaaa gataagctga attgcaagta 300
 aaattcctac atatttccag cgaatatttt tctgtctga gctaaataga aacgcaa 357

50 <210> 11
 <211> 336
 <212> DNA
 <213> Staphylococcus aureus

55 <400> 11
 acagagcagc aaaagcgtta gtaaaccgtt tcccaagtgc gacgatttac aacacatatg 60

EP 1 770 171 A1

	gtccaactga agctacggta gcagttacaa gtattcaaat tacacaagaa atcttagatc	120
5	aatatccgac attacctgtt ggcgttgaaa gaccagggcg aagattatct actacagatg	180
	aagggtgaact tgttatcgaa ggtcaaagtg taagtttagg atacttaaaa aatgacaaaa	240
	aaacagctga agtatttaat ttcgatgacg gtattcgtac atatcacact ggtgataaag	300
10	cgaagtttga aaatgggtcaa tgggttcattc aagggtc	336
	<210> 12	
	<211> 340	
	<212> DNA	
15	<213> Staphylococcus aureus	
	<400> 12	
	catatgggtga ttttacattc ttcttaattg ctttaattgc attattacca gtcattatac	60
20	ttggattttt aggtaagcga agttacattt ataatggcgt agttacagca tttatgattg	120
	tgtaaatctt ttcttctgat aaacataatc tgtttgacca aaagtattta agtgttcaat	180
	taattagttt tattattttac gtcgtatggc aagttttatt gataatgttt tattatcatt	240
25	caaaacaaaa aaataattca ttttcaaaat ttgtaactgt aatgggtttta tcaatattgc	300
	cattagcact tgtgaaagtg ttacaaagta catgggttagg	340
	<210> 13	
30	<211> 210	
	<212> DNA	
	<213> Staphylococcus aureus	
	<400> 13	
35	aaattttatta gcagaagtag cagaaaatga tattgttaaaa gaaaatccag acgtagaaat	60
	ttttgaagaa ggtattattg attctttcca aacagttgga ttattattag agattcaaaa	120
	taaaacttgat atcgaagtat ctattatgga ctttgataga gatgagtggg caacacaaaa	180
40	taaaatcggt gaagcattag aagagttacg	210
	<210> 14	
	<211> 262	
	<212> DNA	
45	<213> Staphylococcus aureus	
	<400> 14	
	tttaggcgaa aatatcgggtg aagaagataa aaaatctgct gaagagaaaa aagacgctct	60
50	taaaactgct ttagaaggtc aagatataga agatattaaa tctaaaaaag aagaacttga	120
	aaaagtgatt caagaattat cagcaaaagt atatgagcaa gcgggtcaac agcaacaaca	180
	agcacaaggt gcaaatgctg gtcaaaaaca cgatagtact gtagaagatg ctgaatttaa	240
55	agaagtaaaa gacgacgaca aa	262

EP 1 770 171 A1

<210> 15
 <211> 224
 <212> DNA
 <213> Staphylococcus aureus

5

<400> 15
 ggtcttatcg ttgcagctat cactatttca tcactaggga gcttaagtgg actattagtg 60
 ccactgttta ctggacgaat tgtagataaa ttttccgtga gccatatcaa ttggaatcta 120
 10 atcgcattat ttggtggtat ctttgttatc aatgctttat taagcggatt aggtttatat 180
 ttattaagta aaattggtga aaagattatt tatgogatac gctc 224

15

<210> 16
 <211> 435
 <212> DNA
 <213> Staphylococcus aureus

20

<400> 16
 tcaggtgaaa tgtagaatac agcattaata gctggtttga tttcaattgg tgcagaagtg 60
 atgcgattag gtattatttc aacaccaggt gttgcatatt taacacgcga tatgggtgca 120
 gagttagggtg taatgatctc agcctctcat aatccagttg cagataatgg tattaaatcc 180
 25 tttggatcag atggttttaa actatcagat gaacaagaaa atgaaattga agcattattg 240
 gatcaagaaa acccagaatt accaagacca gttggcaatg atattgtaca ttattcagat 300
 tactttgaag gggcacaaaa atatttgagc tattttaaata caacagtaga tgtaacttt 360
 30 gaaggtttga aaattgcttt agatggcgca aatggttcaa catcatcact agcgccattc 420
 ttatttggtg actta 435

35

<210> 17
 <211> 426
 <212> DNA
 <213> Staphylococcus aureus

40

<400> 17
 tagtcaccat gaagttgccc ctggtcaaca tgaaattgac tttaaatatg cagatgctgt 60
 tacagcatgt gataatatcc aaacatttaa attggttggt aaaacaatcg cacgtaaaca 120
 taattttacac gcaacattta tgcctaaacc attatttggt gtgaatggta gcggtatgca 180
 45 cttaaactgt tcattattca aaggtaaaga aaatgcattc tttgatccga atactgaaat 240
 gggcttaaca gaaacagctt accaattcac agctggtgta cttaaaaacg cacgtggatt 300
 tacagcggta tgtaacccat tagtaaaactc atacaaacgt ttagttcctg gttatgaagc 360
 50 accatgttat attgcatgga gcggtaaaaa ccggttcaccg ttaatccgtg taccatcttc 420
 aagagg 426

55

<210> 18
 <211> 339

EP 1 770 171 A1

<212> DNA
<213> Staphylococcus aureus

<400> 18
5 cgaatgatgc aatcagacga aatatggctg tcttctctat gagtgtagta agtaagttaa 60
cggattttaac gccaaaggcaa atacgttact atgaaacaca tgaactcatc aaacctgaaa 120
gaacagaagg tcaaaaacgt ctgttctcac tcaatgattt ggaaagatta ctagaaatta 180
10 aatcattatt agaaaaagga tttaatatca aagggattaa acaaatcatt tatgactcac 240
aagagcattt aacaacagat gaacaagaga taagaaaaaa gatgattgta gatgccacgc 300
aaaagcctat tggagaaaact ttgccaataa atcgtggtg 339

<210> 19
<211> 390
<212> DNA
<213> Staphylococcus aureus

<400> 19
20 ttgaatcacc aaattgaggt tggtgcaaat agaacgaagt ttgaattaga taatgcagaa 60
aaacgtatgc atatcgttga aggtttgatt aaagcgttgt caattttaga taaagtaatc 120
25 gaattgattc gtagctctaa aaacaagcgt gacgctaaag aaaaccttat cgaagtatac 180
gagttcacag aagaacaggc tgaagcaatt gtaatgttac agttatatcg tttaacaaac 240
actgatatag ttgcgcttga aggtgaacat aaagaacttg aagcattaat caaacaatta 300
30 cgtcatattc ttgataacca tgatgcatta ttgaatgtca taaaagaaga attgaatgaa 360
attaaaaaga aattcaaata tgaacgactg 390

<210> 20
<211> 415
<212> DNA
<213> Staphylococcus aureus

<400> 20
40 aaatccatcg agatggtaat atatatcatc aaagttttaa aaacgggtggt tcgccatctt 60
ctggttttagt gaaaaaagggt aaaactaaga aaacaggtac caaagtaaca tttaaacctg 120
atgacacaaat ttttaaagca tctacatcat ttaattttga tgttttaagc gaacgactac 180
45 aagagtctgc gttcttattg aaaaatttaa aaataacgct taatgattta cgcagtggtg 240
aagagcgtca agagcattac cattatgaag aaggaatcaa agagtttggt agttatgtca 300
atgaaggaaa agaagttttg catgacgtgg ctacattttc aggtgaagca aatggtatag 360
50 aggtagacgt agctttccaa tataatgatc aatattcaga aagtatttta agttt 415

<210> 21
<211> 206
<212> DNA
<213> Staphylococcus aureus

EP 1 770 171 A1

<400> 21
 gtatgcaatt tgatcgtggt tatcaatcac cgtatatggt tactgattca gataaaatgg 60
 5 ttgctgaatt agaacgcca tacatcttag taacagataa gaaaatctcg tctttccaag 120
 atatcttacc tttattagaa caagtgggtc aatctaactg tccaatctta attgtagctg 180
 atgaagttga aggcgatgca ttaaca 206
 10
 <210> 22
 <211> 380
 <212> DNA
 <213> Staphylococcus aureus
 15
 <400> 22
 tctatttaatt ttatttatga attaagttct gtattattca ataactgcta aaatatcttc 60
 ttcatttaatt accagatatg tttcattatc tcgtttaact totgtaccag catattgttg 120
 20 gaacacgaca cgggtccctt ctttcacttc aggagtcact cttgtaccat catttaatag 180
 gcgtccagtt cctactgcaa cgataacgcc ttcgtttgat ttttcttttag cactatcagt 240
 taaaacaata coacttttag ttgtttgttc ttgttctttt ttotcaataa tcacacgatt 300
 25 tccaattggg tttagcatga ttgttcctcc ttaaaaaacc taaagtttag cacttaacat 360
 taaagagtgc taacatacat 380
 30
 <210> 23
 <211> 496
 <212> DNA
 <213> Staphylococcus aureus
 35
 <400> 23
 tgtcatatta tcaacatgta atcgaactga agtatatgct gttgttgatc aaattcacac 60
 aggtcggttac tatattcaac gattttctagc tcgtgcattt ggatttgaag tagatgatat 120
 taaagcaatg tcagaagtaa aagtggggga cgaagcagta gaacatttat tgcgtgtcac 180
 40 ttctggttta gattcaatcg tacttggaga aactcaaatt ttaggtcaaa taagagatgc 240
 atttttctta gcgcaaagca caggtacgac aggaacaatt tttaatcatc tatttaaaca 300
 ggcaattact tttgcaaaaa gagcacataa tgaaacagat atagctgata atgctgtaag 360
 45 tgtgtcttat gctgcggtcg agttggcgaa aaaagtatct ggcaaattga aaagtaagca 420
 agctatcatt attggtgcag gggaaatgag tgaattatca ctattaaatc ttcttgggtc 480
 tggaattact gatatt 496
 50
 <210> 24
 <211> 619
 <212> DNA
 <213> Staphylococcus aureus
 55
 <400> 24

EP 1 770 171 A1

	aaaatgatca aaggtgaaga aacatcacat acacctgttt ggtttatgcg acaagctggc	60
	cgttcgcaac cagaatatcg aaaattgaaa gaaaaatatt cactattcga tattacacat	120
5	cagccggagt tgtgcgctta tgtaacacat ttaccagttg ataattatca tacagatgca	180
	gcaattttat acaaagatat tatgacacca ttaaagccaa ttgggtgtcg tgtagaaatt	240
	aaatcgggta ttgggtccagt gattcataat ccaatcaaaa caattcaaga tgttgagaaa	300
10	ctttctcaaa tagaccccgga acgagatgta ccatatgtat tagatacaat taaactttta	360
	acagaagaaa agttaaatgt gccgctaata ggatttactg gggcaccatt tacattagcg	420
	tcatatatga ttgaaggcgg accatcgaaa aattacaatt ttacaaaagc gatgatgtat	480
15	agagatgaag caacatgggt tgctttaatg aatcatttag ttgatgtatc tgttaaatat	540
	gtaacagctc aagtcgaagc aggtgccgaa ttgattcaaa ttttcgattc atgggtaggt	600
20	gcattaaatg tcgaggatt	619
	<210> 25	
	<211> 578	
	<212> DNA	
25	<213> Staphylococcus aureus	
	<400> 25	
	aatgggatta ttagttatgg cttatggcac accttataaa gaaagtgaca tagagccata	60
	ttatacagat attagacatg gtaaacgtcc atctgaagaa gaacttcaag atttgaaaga	120
30	tagatatgaa tttataggtg gtttatcacc attagcaggt acaacagatg accaggctga	180
	tgcgctagtt tcagcattaa ataaagcata tgcagatggt gaatttaaac tatacttagg	240
	attaaaacac atttcacat ttatcgaga tgcgggtgaa caaatgcaca atgatggcat	300
35	tactgaagca atcacggtag tactagcacc acattattct tcattttcag taggatcata	360
	tgacaaacgt gctgatgaag aagctgcaaa atatggtatt caacttacac atgtgaaaca	420
40	ttattatgaa caacctaaat ttattgaata ttggacgaat aaagtcaacg aaacattagc	480
	tcaaataccg gaagaggaac ataaagacac ggtattagtt gtttcggcac atagtttgcc	540
	aaaaggttta atcgaaaaga ataatgatcc atatccac	578
45	<210> 26	
	<211> 382	
	<212> DNA	
	<213> Staphylococcus aureus	
50	<400> 26	
	atgagatata cgaaatcaga agaagcaatg aagggtgctg aaactttaat gcctgggtgt	60
	gtaaatagtc cagtacgcgc atttaaatca gtagatacac cagcaatttt tatggatcac	120
	ggtaaagggt caaaaattta tgatatgat ggtaacgagt atatcgacta tgtactaagt	180
55	tggggggccac ttattttagg acatagagac cctcaagtta ttagtcattt acatgaagca	240

EP 1 770 171 A1

	attgataaag gtacaagttt tggatgcatca acattacttg aaaataaatt ggcgagctc	300
5	gttattgacc gagtaccttc aatagaaaaa gtgcgtatgg tgtcatctgg tacagaagct	360
	acattggata ctttaagatt ag	382
10	<210> 27 <211> 1099 <212> DNA <213> Staphylococcus aureus	
15	<400> 27 aaacagcaag atcctaatat tgatgtaacc atctttgaag catcgaatcg tccgggggga	60
	aagattcaat cgtatcgtaa agatgggttat atgattgaac tagggcctga atcttattta	120
	ggtagaaaaa cgattatgac agaattagcg aaagatattg gattagaaca agatattgtt	180
20	acaaatacga ctggacaatc atatatTTTTT gcgaaaaaca aattgtatcc tattccaggt	240
	ggatcaatta tgggaattcc gacagatatc aaaccgtttg tgacaactaa attaatttca	300
	ccacttggta aattaagagc aggattagat ttaatcaaaa agcctataca aatgcaagat	360
25	ggtgacattt ctgttgggtgc atttttcaga gcaagattag gtaatgaggt acttgagaat	420
	ttaatagagc ctttaatggg tggatatttat ggtaccgata ttgataaatt aagtttgatg	480
	agtacgtttc ctaattttta agaaaaagaa gaggcattcg gaagtctgat aaaaggatg	540
30	aaggatgaga aaaataagcg tctgaaacaa agacaattat atcctggcgc accaaaagga	600
	caattcaaac aatttaagca tggtttaagt tcatttattg aagcattaga acaagatgtg	660
	aaaaataaag gtgtgacaat acgctacaat acgtcagtgg atgatattat tacatctcaa	720
35	aagcaatata aaattgttta cagtaatcaa caagaagatg tattcgatgg ggtattagtg	780
	acaacaccgc atcaagtctt tttgaattgg ttcggacaag atccagcatt tgattacttt	840
	aaaacgatgg atagtacgac tgttgcaact gttgtattgg catttgatga aaaagatatt	900
40	gaaaataactt atgatggtac tggcttcgtg attgcgagaa cgagtgatac agacattacc	960
	gcatgtaact ggacatcgaa aaaatggcca tttactacac cagaaggtaa ggttttgatt	1020
	cgtgcgtatg taggtaaacc aggtgatact gtggttgatg atcatacaga taatgaatta	1080
45	gtatcgattg tacgtagag	1099
50	<210> 28 <211> 629 <212> DNA <213> Staphylococcus aureus	
55	<400> 28 attaacaaaa ttgatttacc tgctgcagaa cctgaacgcg tgaaacaaga aattgaagat	60
	atgatagggt tagaccaaga cgatgttggt ttagcaagtg ctaaactctaa cattggaatt	120

EP 1 770 171 A1

	gaagagatac tagagaaaat agttgaagtt gtgccagctc cagatggcga occagaagca	180
	ccactaaaag cgtaaatatt tgattctgag tatgatccat atagaggggt aatttcatcg	240
5	ataagaattg tagacgggtgt tgttaaagcc ggagataaaa ttcgaatgat ggcgactggg	300
	aaagagttcg aagtaacaga agttggaatt aatacaccta agcagcttcc agttgatgaa	360
	ttaacagttg gtgatgttgg ttatatatt gcaagtatta aaaatgttga tgattctagg	420
10	gttgggtgaca ccatcacatt agctagtaga cctgcatcag aaccattgca aggttataag	480
	aaaatgaatc caatgggtata ttgoggactg ttcccaatag ataacaaaaa ttataatgat	540
	ttaagagaag cattagaaaa attacaattg aatgatgcat cattagaatt tgagcctgaa	600
15	tcgtcacaag cattagggtt tggttatag	629
	<210> 29	
	<211> 265	
20	<212> DNA	
	<213> Staphylococcus aureus	
	<400> 29	
	aaagacgcac caaaaccagc acactttttt caccaagtca ttgtaattgc tttagtactc	60
25	tttgtatcga aaataattga atcatttatg ccaattccta tgccctggatc agtaatcggg	120
	ttagtattat tatttgtatt attatgtact ggtgctgtta agttaggcga agtcgaaaaa	180
	gtaggaacga cactaacaaa taacattggc ttactcttcg taccagccgg tatctcagtt	240
30	gttaactctt taggtgtcat tagcc	265
	<210> 30	
	<211> 278	
35	<212> DNA	
	<213> Staphylococcus aureus	
	<400> 30	
	gattaaccac ttagcactaa atacacctta cttcggaata ctgttatccg ttataccatt	60
40	tttcttagcg accatattat ttgaaaaaac taatcgtttc ttcttattcg caccgctatt	120
	tgtcagtatg gtatttgggtg tggccttcct ctatttaaca ggcatccgt ataagactta	180
	caaaataggt ggagacatta tttacttctt cttagaaccg gcaacaatct gttttgcgat	240
45	tccgttatat aaaaagcgtg aagtgttgt taaacatt	278
	<210> 31	
	<211> 388	
50	<212> DNA	
	<213> Staphylococcus aureus	
	<400> 31	
	cgacaaaacac ccaacaagca catacacaaa tgtcaacaca atcacaagac gtatcttatg	60
55	gtacttatta tacaattgat tctaattggg attatcatca cacacctgat ggtaactgga	120

EP 1 770 171 A1

	atcaagcaat gtttgataat aaagaatata gctatacatt cgtagatgct caaggacata	180
	cgcattatatt ttataactgt tatccaaaaa atgcaaagtc caatggaagc ggccaaacat	240
5	atgtgaatcc agcaatagca ggagataaca atgactacac agcgagtcaa agccaacagc	300
	atattaatca atatggttat caatcaaagc taggtccaga cgcgagctat tattcacata	360
	gtaacaacaa ccaagcgtat aacagcca	388
10	<210> 32 <211> 203 <212> DNA <213> Staphylococcus aureus	
15	<400> 32 gttatcgtat taactgggtga aggtgattta gcattctgtt ctgggtgggtga ccagaagaaa	
	cgtggacatg gtggttatgt aggtgaagac caaatccctc gcttaaagt attagattta	120
20	cagcgttttaa ttcgtattat tccaaaaccg gttatcgcga tggtaaaagg ttatgctgta	180
	ggtagcggtg atgtactaaa tgt	203
25	<210> 33 <211> 1434 <212> DNA <213> Staphylococcus aureus	
30	<400> 33 cgtaagggaa gtagttatca gtccgggatc acgctcaacg ccacttgac ttgcatttga	
	agcacatcca aatattaaaa catggataga cccgatgag cgaagtgcag ctttttttgc	120
	agttgggtta attaaaggta gtgaaagacc tgcgctata ttatgtacgt caggtacagc	180
35	agcagcgaat tatacgcctg caattgctga aagccaaatt agtagaattc cattaatcgt	240
	tttaacaagt gaccgtccgc atgaattaag aagtgtaggc gcaccacaag cgattaatca	300
	agtaaatatg tttaataatt atgtaagtta tgagttcgat atgcctattg cggatgatag	360
40	taaagagacc attaatgcaa ttattatca aatgcaaatt gctagtcaat atttatatgg	420
	accacataaa ggccaattc attttaactt gccatttaga gatccgttaa cacctgattt	480
	gaatgcaaca gaattgttaa cttctgagat gaagatttta ccgcactatc aaaaaagtat	540
45	agatgcatcg gcattaagac acatttttaa taagaaaaaa ggtttaatta ttgtagggga	600
	tatgcagcac caagaagttg atcaaatact aacgtattca acgatatatg atttgcctat	660
	tttagctgat cttttaagtc atttaagaaa atttgatcat ccgaatgtta tctgtacata	720
50	tgatttgctg tttagaagcg gcttagactt aaatgtggat ttcgtaattc gtgttgggaa	780
	accagtgatt tctaaaaagt tgaatcaatg gttaaagaaa actgatgcat ttcaaatatt	840
55	agtgcaaac aatgataaga ttgatgtctt tccgatagca ccagatattt catatgagat	900
	ttctgcgaat gattttctta ggtcattaat ggaagacacg accatcaatc gcgtaagttg	960

EP 1 770 171 A1

	g t t a g a a a a a t g g c a a c g c t t a g a g a a a a a a g g g c g t a a a g a a t t a a a t g t t a t t t g g a	1020
5	a c a a g c t a c a g a t g a g a g t g c a t t c g t t g g t g a a t t g a t t a a g a a a a c a t c t g a a a a g a	1080
	t g c a t t a t t t a t t a g t a a t a g t a t g c c t a t c a g a g a t g t a g a t a a c t t g t t a t t g a a t a a	1140
	a a a t a t a g a t g t c t a t g c g a a t c g t g g t g c g a a t g g t a t t g a t g g t a t c g t t t c a a c t g c	1200
10	a c t g g g t a t g g c t g t g c a t a a a c g a a t a a c a t t a t t g a t a g g t g a t t t a t c a t t t t a t c a	1260
	t g a t a t g a a t g g a c t a t t a a t g t c a a a a t t a a a t a a t a t t c a g a t g a a t a t t g t a t t a t t	1320
	g a a c a a c g a t g g t g g c g g t a t t t t t t t c a t a t t a c c a c a a a a g a a a g t g c a a c t g a c t a	1380
15	t t t t g a a c g g t t g t t t g g c a c a c c g a c g g g a t t g g a t t t c g a g t a t a c a g c t a a	1434
	<210> 34	
	<211> 1149	
	<212> DNA	
20	<213> Staphylococcus aureus	
	<400> 34	
	a t g g a c t t t t g g t a t a t a a a c a a g c a c a a c a a a t g g a c a t c a t a t t g c g a t a a c a g a c	60
25	g g t c a a g a a t c t t a t a c t t a t c a a a a t t t a t a c t g t g a a g c g a g t c t a t t g g c t a a a g a	120
	c t c a a g g c t t a t c a a c a a t c t c g t g t c g g g c t a t a c a t a g a t a a t t c g a t t c a a t c g a t c	180
	a t t t t a a t a c a t g c t t g t t g g t t g g c a a a t a t t g a a a t t g c g a t g a t t a a t a c a a g g t t g	240
30	a c a c c t a a t g a g a t g a a g a t c a g a t g a g g t c a a t c g a t g t a c a a t t g a t t t t t g t a c c	300
	t t g c c a c t g g a a t t g c g a g g g t t t c a a a t t g t a t c g c t g g a t g a t a t t g a a t t c g c t g g a	360
	a c g g a t a t t a c a a t g a a c g g t t t g t t g g a c a a c a c a a t g g a t a t c c a a t a t g a t a c a t c g	420
35	a a t g a a a c t g t g g t g c c g a a g a g t c g c c g t c c a a c a t a t t a a a t a c t t c a t t t a a t t t a	480
	g a t g a c a t t g c a t c g a t t a t g t t t a c a t c a g g a c a a c t g g c c c t c a a a a a g c g g t g c c g	540
	c a a a c g t t t c g t a a t c a t t a t g c c a g t g c a a t c g g a t g t a a a g a g a g c t t g g g a t t t g a t	600
40	c g t g a t a c t a a t t g g c t a t c t g t c t t g c c g a t t t a t c a t a t t t c g g g t c t c a g t g t a c t t	660
	t t a a g a g c t g t t a t t g a a g g t t t a c t g t g c g c a t t g t t g a t a a a t t c a a t g c c g a a c a a	720
	a t t t t a a c g a t a a t t a a a a a t g a a c g c a t c a c g c a c a t t t c g c t t g t g c c a c a a c t t t a	780
45	a a t t g g c t t a t g c a a c a a g g t t t a c a t g a a c c t t a t a a t t t g c a a a a a a t a t t a c t c g g c	840
	g g t g c t a a a t t a t c t g c c a c t t t g a t a g a g a c g g c a t t a c a a t a t a a c c t g c c a a t t t a t	900
	a a t t c a t t t g g t a t g a c t g a g a c a t g t t c a a a t t t t t a a c a g c a a c a c c g g a a a t g t t g	960
50	c a t g c a c g t c c t g a c a c t g t a g g g a t g c c a a g t g c c a a t g t a g a c g t t a a a a t t a a a a a t	1020
	c c t a a t a a a g a a g g t c a t g g a g a a t t a a t g a t t a a a g g t g c c a a t g t g a t g a a t g g a t a t	1080
55	t t g t a t c c a a c a g a t t t a a c g g g t a c g t t t g a a a a t g g t t a t t t t a a t a c g g g t g a c a t t	1140
	g c t g a a a t a	1149

EP 1 770 171 A1

5 <210> 35
 <211> 236
 <212> DNA
 <213> Staphylococcus aureus

 <400> 35
 attgataatt tacatccaac acctgcttta ggtggctatc caaaagaatt tgcgatggat 60
 10 tttattgaac agaaagaatt tggtagacga ggattatatg gtgcgccggt tggctatata 120
 gatatatatg atgattgtga atttattggt gcaattcgtt cgatgcttat taagaaagca 180
 caagcaactt tatttgctgg gtgtggcatt gttaaagatt ctgatccaga tagtga 236
 15

 <210> 36
 <211> 327
 <212> DNA
 <213> Staphylococcus aureus
 20
 <400> 36
 atgaggtact ctttaattag tggtagcttg atagggttta ttgcgcctct aatcgggtgt 60
 tttatcggtt ttagacgact atcacttata gctgatgctc taagtcattg aacttttaggt 120
 25 ggtatatctt tcggtatggt tttacttact attatgccc aactagtatt tattaatcca 180
 atgtgggttg gaactctatt cgcaatagta ggtgcgcttc taattgaaaa attaagaacg 240
 tcatacactg cttaccaaga aattgctatt ccaattataa tgagtgcctg tatcgcttg 300
 30 agtgcaatct tcatttcatt agctgat 327

 <210> 37
 <211> 195
 35 <212> DNA
 <213> Staphylococcus aureus

 <400> 37
 gaaaatacag aacttgatgg tgaaatgaag tttagaatcg cttgtacaaa ccatcatcat 60
 40 catcatttta tctgtgaaaa gtgtggagat acaaaggtaa tagattattg tccaatagat 120
 cagataaagt tatcactacc tgggtgtaat attcacaac acaaacttga agtttatggt 180
 gtatgtgagt cttgc 195
 45

 <210> 38
 <211> 313
 <212> DNA
 <213> Staphylococcus aureus
 50
 <400> 38
 acacagagaa taatcaagag aagacgtttt catctgaaga aagtaacagt aagccattta 60
 tggtagaaaa tcaaaacgat gaaatagtta taagagaaga ttcataataat ccattcgtaa 120
 55 cgaaaacgtc tgaaagttaa atagctgatg atgaatcttc cgggtataat aatacacgtg 180

EP 1 770 171 A1

	aaaaagatga agactacttc aaaaagcaac aagaaattct acaagaaatg gatcaaacat	240
	ttgatctgaa tgacgataca tctgtgcaaa attatgagaa taaagcgtct gatgattatt	300
5	atgatgtaaa cga	313
	<210> 39	
	<211> 322	
10	<212> DNA	
	<213> Staphylococcus aureus	
	<400> 39	
	ttgtaattca ctttaacttca ccaatgcctc aattgggtgc atattagata aattcaaatt	60
15	tttaatttgt agttcaatct cgctttcttg atcattttca aacaaatcaa atgatgcttg	120
	ttcaaagtct ttttgagata aagtatcagt tgtttcttca acacttaagt ttaaattttc	180
	ttgattaatt tcagggttcat ttctgacctt ttttaaattt gatatcgatg atttttttacc	240
20	agcagacgct tcaaactcgc ttagaatcac ttgtgctctg ctaataactt tttcaggtaa	300
	atcagctaatt ttcgcaactt ga	322
	<210> 40	
25	<211> 432	
	<212> DNA	
	<213> Staphylococcus aureus	
	<400> 40	
30	actcaaacag ttagcaagat tgctcaagtt aaaccaaaaca acactggatg togtgcttct	60
	gtttatgaaa aaacagcgaa aaacgggtgcg aaatatgcag accgtacgtt ctatgtaaca	120
	aaagagcgtg ctcatggtaa tgaaacgtat gtattattaa acaatacaag ccataacatc	180
35	ccattagggtt ggttcaatgt aaaagactta aatgttcaaa acttaggcaa agaagttaaa	240
	acgactcaaa aatatactgt taataaatca aataacggct tatcaatggg tocttggggg	300
	actaaaaacc aagtcatttt aacaggcaat aacattgctc aaggtagcatt taatgcaacg	360
40	aaacaagtat ctgtaggcaa agatgtttat ttatacggta ctattaataa ccgcactggg	420
	tgggtaaatg ca	432
	<210> 41	
45	<211> 353	
	<212> DNA	
	<213> Staphylococcus aureus	
	<400> 41	
50	ggtgttccaa actcaaaaga tgatataggt actgggtgcat acattcacga tgggtgttatt	60
	caacaggcaa cacgtattgc taaaaaaatg tatgatgact tattaattgt tgcagacact	120
	tgtttatgtg aatatactga tcatgggtcat tgtggcgtga ttgatgacca tacacatgac	180
55	gttgacaatg ataaatcatt gccactgctt gttaaaacag caatttctca agtggaagct	240

EP 1 770 171 A1

ggtgctgata ttattgcgcc aagtaatatg atggatgggt ttgttgctga aattcgtcgt 300
 ggattagatg aagccggcta ttacaatatt cctataatga gttatgggtgt caa 353
 5
 <210> 42
 <211> 399
 <212> DNA
 <213> Staphylococcus aureus
 10
 <400> 42
 aacacaatcg gaaatgttgg atacggctga aaagttatca aagctaata agatggatac 60
 taagaaaatt acagaacgtg ataagaaaga tttctggatt cagttgcac ctaaaaaagc 120
 15
 aaaagcaatg atgacaaaag aacaagctat gtttagcagat ggaagtatta aacaagatca 180
 atatgataaa caactgttat cgaaaatcag aaaatcacaa ttagatgaat tgtcttctaa 240
 agatttaciaa gtttttagta tttttcgaga gatgaatgca ggaacagttt tagatccaca 300
 20
 aatgataaaa aatgaagatg tcagtgaaaa agagtatgca gcagtttctc agcaactttc 360
 caaattacca ggtgttaaca cgtctatgga ttgggatag 399
 25
 <210> 43
 <211> 329
 <212> DNA
 <213> Staphylococcus aureus
 30
 <220>
 <221> misc_feature
 <222> (56)..(56)
 <223> n is a, c, g, or t
 35
 <220>
 <221> misc_feature
 <222> (71)..(71)
 <223> n is a, c, g, or t
 40
 <400> 43
 tgacatttca aatcaatcac atcgggtgca atggttcaag aaatcaaatg aaagcncgca 60
 gaagaacttg naaaaagatg gttattctgt tgaagtaatt gacttacgta ctgttcaacc 120
 aatcgatgtt gatacaattg tagcttcagt tgaaaaaact ggtcgtgcag ttgtagttca 180
 45
 agaagcaciaa cgtcaagctg gtgttggtgc agcagttgta gctgaattaa gtgaacgtgc 240
 aatcctttca ttagaagcac ctattggaag agttgcagca gcagatacaa tttatccatt 300
 cactcaagct gaaaatgttt ggttaccaa 329
 50
 <210> 44
 <211> 303
 <212> DNA
 <213> Staphylococcus aureus
 55
 <400> 44
 ctggagatac tattgaagaa gacgatgttt tagctgaggt acaaacgat aaatcagtag 60

EP 1 770 171 A1

	tagaaatccc atcaccagta tctggtagtg tagaagaagt tatggtagaa gaaggtagag	120
5	tagctgtagt tggtagcgtt attgttaaaa tcatgacacc tgatgcagaa gatatgcaat	180
	ttaaagggtca tgatgatgat tcatcatcta aagaagaacc tgcgaaagag gaagcgccag	240
	cagagcaagc acctgtagct actcaaactg aagaagtaga tgaaaacaga actgtaaaag	300
10	caa	303
	<210> 45	
	<211> 302	
	<212> DNA	
15	<213> Staphylococcus aureus	
	<400> 45	
	tagttatcga gattatcaaa gattggtaga taaacttcaa gttcacgata aagagataga	60
20	cttagcttct agcttacaac aaacaatgct taaaacagat attccacaat ttgatagtagt	120
	tcaaattggc gttatttcag tggcggcaca aaaagtagt ggagattatt ttaatttaat	180
	tgaccataac gatggcaca tgagctttgc tgttgtagat gtcattggaa aaggtatacc	240
25	agctgcttta gcaatgagta tgataaagtt tggcatggat tcttatggac actcacaatt	300
	ac	302
	<210> 46	
30	<211> 254	
	<212> DNA	
	<213> Staphylococcus aureus	
	<400> 46	
35	tgaatcttaa tatagaaaca accactcaag ataaatttta cgaagttaa gtcggtagag	60
	aattagatgt ttatactgtg cctgaattag aagagggtttt aacacctatg agacaagatg	120
	gaactcgtga ttttatgtt aatttagaaa atgtgagtta tatggattcg acagggttag	180
40	gtttattcgt aggtacatta aaagcattaa accaaaatga taaagaacta tacatttttag	240
	gtgtgtcaga tcgt	254
	<210> 47	
45	<211> 191	
	<212> DNA	
	<213> Staphylococcus aureus	
	<400> 47	
50	tctaaagaag attttatcga aatgcgcgtg ccagcatcgg cagagtatgt aagtttaatt	60
	cgtttaacac tttctggcgt tttttcgaga gctggtagta catatgatga tattgaagat	120
	gccaaagattg cagttagtga agctgtgaca aatgcagtta aacatgcata caaagaaaat	180
55	aacaatgtag g	191

EP 1 770 171 A1

<210> 48
 <211> 204
 <212> DNA
 <213> Staphylococcus aureus

5

<400> 48
 tgagatagat gcaatcatgt ttatgggttaa tgccaatgag gaaattggac gaggtgatga 60
 atatattata gaaatgttga aaaatgttaa gacaccagta ttttttagtat taaataaaat 120
 10 agatttagtg catccagatg aattaatgcc aaagattgaa gaatatcaaa gttatatgga 180
 ctttacagag attgtaccta tttc 204

15

<210> 49
 <211> 234
 <212> DNA
 <213> Staphylococcus aureus

20

<400> 49
 aatataattg ggaagaagta catcaagaag cagaaatttt agaacatcga atttcagatt 60
 tattttgttga aaggetggat agcctgttaa atttcccaga aacttgcccg cacggcgggtg 120
 tgattcctag aaataatgaa tataaagaga aatatataac aacgattttg aattatgaac 180
 25 ctggtgatat cgttacaatc aaacgtgtga gagataagac cgatttgcta atat 234

30

<210> 50
 <211> 251
 <212> DNA
 <213> Staphylococcus aureus

35

<400> 50
 ttgaattacc aaaattacca tacgcatttg atgcattaga accacatttt gacaaagaaa 60
 ctatggaaat tcatcatgac agacatcata acacttatgt tacgaaatta aatgctgcag 120
 tagaaggtag agatttagaa tctaaatcta ttgaagaaat tgttgctaatt ttagacagtg 180
 taccagctaa catccaaact gctgtacgta ataatggcgg tggacattta aaccattcat 240
 40 tattctggga g 251

45

<210> 51
 <211> 359
 <212> DNA
 <213> Staphylococcus aureus

50

<400> 51
 gcgcattttg aaaaggcata cttgagaata ctaaagtgtg tgttacaatt aaagaaccta 60
 ctgttgctaa ttttttcatt gtcttgctcc cttatattac aatttgatta catttacatt 120
 atcatacga tacaagaa atgcaacaaa atttttgaat cattacattt ttttataaaa 180
 atttcacttt agattcacaa taattactta ttttgtcaat ttatttaatg tcaatatgtt 240
 55 gattaattaa tagtggtgtc taatgtatat aatatttagg tcatcgttat agtcaacaat 300

EP 1 770 171 A1

	aataaggtat ttcgagttga aatttatctt attatatttc cacttttacg tgctatccc	359
5	<210> 52 <211> 438 <212> DNA <213> Staphylococcus aureus	
10	<400> 52 ttcgttggtc ataggtgcga gtgaactatc aattaaagat ttactacatt taactgagtc	60
	acagcggaaat attttattct caagccgaat accaaggacg atgagtattt taattgctgg	120
	aagttcgttg gcttttagcag gcttgataat gcaacaaatg atgcaaaata agtttggttag	180
15	tccgactaca gctggaacga tggaaatgggc taaactaggt attttaattg ctttattggt	240
	ctttccaacc ggcatatattt tattaaaact agtatattgct gttatttgta gtatttgcg	300
	tacgttttta tttgttaaaa tcattgattt tataaaagtg aaagatgtca tttttgtacc	360
20	gcttctagga attatgatgg gtgggattgt tgcaagtttc acaaccttca tctcattg	420
	cacgagtgcg gttcaaag	438
25	<210> 53 <211> 288 <212> DNA <213> Staphylococcus aureus	
30	<400> 53 tattgcctta tttagatgta ttgcttttag gtcgtgctga agcaattaat ctggggatat	60
	cgtatgaaaa attaacgcga attctacttg taatagtctc agtttttagt tctgtgtcaa	120
	ctgcattagt aggaccaatt acatttttag gtttattaac tgtaaactca gcgcattgac	180
35	taatgaagac gtatgaacat aagtatattt taattgacgac aatttgcttg agttggatta	240
	gtttatttag tgcgcaatgg gtagttgaaa atgtgtttga agctacga	288
40	<210> 54 <211> 431 <212> DNA <213> Staphylococcus aureus	
45	<400> 54 aatcaaatga tattggaaga tattagcata gatatcgaaa aaggtaaatt gacttcttta	60
	attggacctt atggtgcggg taagagtact ttactttcag cgatttgtag gttaatcgt	120
	tttgataacg gtgaagtga aatagatgga cggtcatgt ctgattataa aaataatgac	180
50	ttgtcgaaaa aaatatctat attaaaacaa acaaaccata ctgaaatgaa tattacggta	240
	gagcagttgg taaactgtgg acgattccct tattctaaag gtcgtttgac gaaagaggat	300
	catgatattg tcaatgatgc gctagatttg ttgcaactac aagatatcag aaatcgtaat	360
55	attaagtcatt tatctggtgg acaacgtcag cgtgcatata ttgcaatgac aatagcacia	420

EP 1 770 171 A1

gataactgaat a 431

5 <210> 55
 <211> 437
 <212> DNA
 <213> Staphylococcus aureus

10 <400> 55
 catgcggtaa caattctgat aaagaacaat caaatcaga gactaaaggt tctaaagata 60
 cagtgtaaaat tgaaaataac tataaatgc gtggcgagaa aaaagatggt agtgacgcta 120
 aaaaagttaa agaaactgtt gaagtaccaa aaaatcctga aaatgcagtt gtgttagact 180
 15 atggcgcat agatgtaatg aaagaaatgg gcttatcaga caaagtaaaa gcattaccta 240
 aaggggaagg cggtaatgca ttaccgaatt tcttagaatc atttaaagat gataaatata 300
 caaacgttgg taatttataa gaagtgaatt ttgataaat tgctgcgacg aaacccgaag 360
 20 taatctttat ctctggacgt acagctaatac aaaagaattt agatgaattc aaaaagctg 420
 cacctaaagc gaaaatt 437

25 <210> 56
 <211> 163
 <212> DNA
 <213> Staphylococcus aureus

30 <400> 56
 gctgactatg aaggtaaagc tgacatttta aaattagatg ttgatgaaa tocatcaact 60
 gcagctaat atgaagtgat gagtattcca acattaatcg tctttaaaga cggtaacca 120
 gttgataaag ttgttggtt ccaacaaaaa gaaaacttag ctg 163

35 <210> 57
 <211> 471
 <212> DNA
 <213> Staphylococcus aureus

40 <400> 57
 caattggctt tcgattattg ttgtatctat ttcatatta ttaattgcaa tagtaatggc 60
 atttattttt aaaaaaattg cacgtattaa tacagaaaca gctattttta gtgttatacc 120
 45 aggagcacta acacaaatgc tggatcatggc tgaacaagac aaacgtgcta atttgtagt 180
 tgtagctta acgcaaacat cacgaattat atttggtgtt gttttagtac cgttcatttc 240
 atattttttt catgatggta acatgcatgc gaatggaaag ttaacaaaag tottgccctt 300
 50 atcacaagta ttaacatag ggcaaatagt tatttttagcg atagctatct ttatagtta 360
 tctaattatg tctaaaataa agtttccaac atttcaatta ttagcaccac tcattgtatt 420
 aattggttgg aatttttcta cagggttaac atttacacta gatcattggt t 471

55 <210> 58

EP 1 770 171 A1

<211> 713
<212> DNA
<213> Staphylococcus aureus

5 <400> 58
cttagatgtc ccatgctgat ataacaattc aatcgcttta tctggatggt tttcaagatg 60
atatttatca atgattaaag ctagtgctcc cgaaacttta ggtgtggcta atgaagttcc 120
10 agcttgataa atatatcttc cgttattggc agtagttaa atgttctcct tatgcatata 180
cccttcattc atccatttat ccacaccgaa ttgatttaaa taagcaaag atcctccggg 240
cgcagcaata tctgtataat tcataccaaa attggaaaac tcagatagat tactcttttg 300
15 atctgtagat cctactgtaa cgacattgtc catagatgca ggaacatctt tcaacttcgcc 360
attacottga tattcacgct gtaatttttag tttctgtttg tcattgacat caataccatc 420
attaccagct gcagcaacaa cgatagattt tttcttcttg gcgtaattga ttgctttctg 480
20 taacgcacgc tattctactt tttcatcttt tctaaatggt tgatgggtcat ttttgtccaa 540
aataatataa ctaccaacac taatattaat gacttgattt ccatcatttg cagcttgaac 600
aatcgctttt gatacccaaa gcagttctgt ttttttacta ccaaacacgc gatacattgt 660
25 aaatttggtta ttcggtgcaa cacctattaa cttaccatta gcaactcggtt gac 713

<210> 59
<211> 738
<212> DNA
<213> Staphylococcus aureus

30 <400> 59
ttcaataggc gtggtgtcag tgtttagcggc tacaatgttt gttgtgtcat cacatgaagc 60
35 acaagcctcg gaaaaaacat caactaatgc agcggcacaa aaagaaacac taaatcaacc 120
gggagaacaa gggaatgcga taacgtcaca tcaaatgcag tcaggaaagc aattagaaga 180
tatgcataaa gagaatggta aaagtggaa acgtgacagaa ggtaaagata cgcttcaatc 240
40 atcgaagcat caatcaacac aaaatagtaa aacaatcaga acgcaaaatg ataataagc 300
aaagcaagat tctgaacgac aaggttctaa acagtcacac caaaataatg cgactaataa 360
tactgaacgt caaaatgatc aggttcaaaa taccatcat gctgaacgta atggatcaca 420
45 atcgacaacg tcacaatcga atgatgttga taaatcacia ccatccattc cggcacaaaa 480
ggtaataccc aatcatgata aagcagcacc aacttcaact acacccccgt ctaatgataa 540
aactgcacct aatcaacaa aagcacaaga tgcaaccacg gacaaacatc caaatcaaca 600
50 agatacacat caacctgcgc atcaaatcat agatgcaaag caagatgata ctgttcgcca 660
aagtgaacag aaaccacaag ttggcgattt aagtaaacad atcgatgggtc aaaattcccc 720
agagaaaccg acagataa 738

55

EP 1 770 171 A1

<210> 60
 <211> 780
 <212> DNA
 <213> Staphylococcus aureus

5

<400> 60
 aggcctcgtat gattgaaaaa attgcagagc tcggtcgtga caagaaaatt gacggtatca 60
 ctgattttacg tgatgaaaca agtttacgta ctggtgtgcg tgcggttatt gatgtgcgta 120
 10 aggatgcaaa tgctagtgtc attttaataa acttatacaa acaaacacct cttcaaacat 180
 catttggtgt gaatatgatt gcaattgtaa atggtagacc gaagcttatt aatttaaaag 240
 aagcgttgggt acattattta gagcatcaaa agacagttgt tagaagacgt acgcaatata 300
 15 acttacgtaa agctaaagat cgtgcccata ttttagaagg gttacgtatc gcaattgacc 360
 atatcgatga aattatttca acgattcgtg agtcagatac agataaagtt gcaatggaaa 420
 gcttgcaaca acgcttcaaa ctttctgaaa aacaagctca agctatttta gacatgcgtt 480
 20 taagacgtct aacaggttta gagagaaaca aaattgaagc tgaatataat gagttattaa 540
 attatattag tgaattagaa gccatcttag ctgatgaaga agtggtatta cagttagtta 600
 gagatgaatt gactgaaatt agagatcgtt tcggtgatga gcgctgtaca gaaattcaat 660
 25 taggtggatt tgaagactta gaggacgaag acttaattcc agaagaaca atagtaatta 720
 ctttgagcca taataactac attaaacggt tgccggtatc tacatatcgt gctcaaaacc 780

30

<210> 61
 <211> 622
 <212> DNA
 <213> Staphylococcus aureus

35

<400> 61
 ttggcacaac tgataagaca ggtactgtca ttcgttttaa agcagatgga gaaatcttca 60
 cagagacaac tgtatacaac tatgaaacat tacagcaacg tattagagag cttgctttct 120
 taaacaaagg aattcaaata acattaagag atgaacgtga tgaagaaaac gttagagaag 180
 40 actcctatca ctatgagggc ggtattaaat cttatgttga gttattgaac gaaaataaag 240
 aacctattca tgatgagcca atttatatc atcaatctaa agatgatatt gaagtagaaa 300
 45 ttgcgattca atataactca ggatatgcca caaatctttt aacttacgca aataacattc 360
 atacgtacga aggtggtacg catgaagacg gattttaaagc tgcattaacg cgtgtcttaa 420
 atagttatgg ttaagtagc aagattatga aagaagaaaa agatagactt tctggtgaag 480
 50 atacacgtga aggtatgaca gcaattatat ctatcaaaca tggatgatcct caattcgaag 540
 gtcaaacgaa gacaaaatta ggtaattctg aagtgcgtca agttgtagat aaattattct 600
 cagagcactt tgaacgattt tt 622

55

<210> 62

EP 1 770 171 A1

<211> 756
<212> DNA
<213> Staphylococcus aureus

5 <400> 62
atcatcagcg acaatgagag atatggttag agagaatcat gtaagaaaag aagatttaat 60
atatccaatt tttgtagttg aaaaagacga tgtgaaaaaa gaaattaagt cattgccagg 120
10 tgtataccaa atcagtttga atttacttga aagtgaatta aaagaagctt atgacttagg 180
catacgtgcc attatgtttt tcggtgttcc aaactcaaaa gatgatatag gtactggtgc 240
atacattcac gatggtgtta ttcaacaggc aacacgtatt gctaaaaaaa tgtatgatga 300
15 cttattaatt gttgcagaca cttgtttatg tgaatatact gatcatggtc attgtggcgt 360
gattgatgac catcacatg acgttgacaa tgataaatca ttgccactac ttgttaaaac 420
agcaatttct caagtggaag ctggtgctga tattattgcg ccaagtaata tgatggatgg 480
20 ttttgttgct gaaattcgtc gtggattaga tgaagccggc tattacaata ttcctataat 540
gagttatggg gtcaagtatg catcaagttt ctttggacct tttagagatg cagcagattc 600
agcgccatca tttggggata gaaaaacgta tcagatggac cctgctaacc gtttggaagc 660
25 acttcgtgaa ttagaaagtg atcttaaaga agggtgcgac atgatgattg ttaaacctgc 720
tctaagttat ttagatatag ttcgagatgt taaaaa 756

30 <210> 63
<211> 200
<212> DNA
<213> Staphylococcus aureus

<400> 63
35 gtgccaattg caggatatgc tacaatctca gatcaaaacg aaatcgaatt tacaggttta 60
attatgaccc cagatggtaa agaacgattt gaatatacaa tgaacggaac agatccgggtt 120
gagttaggca aaacagtgag taacaaatta aaagagcaag gtgcttatga aattataaaa 180
40 cgcttaaatg aacaacatta 200

45 <210> 64
<211> 452
<212> DNA
<213> Staphylococcus aureus

<400> 64
ttgataacat tgctgtgata ggaagtaaga cagcgcaata ttgtgaatca cttggcattc 60
50 gagttgattt tatgccaaac gacttttctc aagaaggatt tttaaaatca tttaatcaaa 120
ctaaccaaaa aatacttttg ccttcgagtg aattggcgag accattgtta ttagcagcgt 180
tatctaaaga taatgaagtt gttaaaatag atttatatac ttcagtgcc t acaaaacaaa 240
55 atatacaaga tgtaaagaa atgatagaac atcaacaaat cgatgcatta acattttcaa 300

EP 1 770 171 A1

	gttcgctggc agtacgttat tattttaatg aaggatttgt accaaaattc aagtcgtatt	360
	ttgctattgg agaacaaaca gcacggacca ttaaatacata tcaacaacca gtaacaattg	420
5	cagaaattca aacactcgaa tcactaattg aa	452
	<p><210> 65 <211> 757 <212> DNA <213> Staphylococcus aureus</p>	
10		
	<p><400> 65 tcttcattc tctcagtcaa agaaggttta tttgatacta aaattgcttt actttcttta</p>	60
15	tttatagctt tgatataatg attcactgga ttgatattcg tataacgcac accatctaca	120
	taaccacttg cacctgctcc aaatccataa tattcctcat taaaccagta aaccttatta	180
	tgttctgatt catggccatc taatgcaaaa ttagatatatt cgtattgatg gaaaggagat	240
20	tgttctatct tagacatcaa caactgatac atgtcagcac ctaaatcctc attaggaagt	300
	ttaagcaacc cttttctata catattataa aattggggtt taggttcaag tattaagccg	360
	taactcgaaa tatgttgaat atccatatct aaagctagat ctaaactttg ttcaaaatct	420
25	tcaatcgtct gtttcggtaa atgatacatt aaatctaaac tgattgattt aatacctgcg	480
	tttttagcat ttaacaccga agtgtaaata tcttcagtat tgtgcgttct acctaaaaca	540
	gacaataact ccggtttgaa tgtttgaacg cccattgaaa ttctattttac tccatatttc	600
30	tctaatagtt ggaactttctc tttagttaac tcatcaggat ttgcttcaaa tgtatactcg	660
	cctgtgattg taaacgtatc acgtattgct ttaagtaatc tttccaactg attaatagaa	720
35	agggccggtt gtgtgccgcc acctacatac atggtct	757
	<p><210> 66 <211> 464 <212> DNA <213> Staphylococcus aureus</p>	
40		
	<p><400> 66 agggcaaatg ctttcagtaa ctataaatag tggcattata aaatttagtg aattggatag</p>	60
	aaaagataat tcaagtaaag ataaaagtaa ttataaagta gttaggaaaa atgatattgc	120
45	atataattct atgagaatgt ggcaaggggc tagtggtaaa tcaaattata atgggattgt	180
	tagccctgca tatactgtgc tttatccaac acaaaatact agctcattat ttattggata	240
	taagtttaaa acacatagaa tgattcataa atttaaaatt aattcacaag gattaacatc	300
50	agatacatgg aacttaaaat ataaacaatt aaaaaatata aatatagata tacctgtatt	360
	ggaggaacaa gaaaagatag gtgatttctt taaaaaatg gatattattga taagtaacaa	420
55	gaaaatgaaa attgaaatat tagaaaaaga gaaacaatcc tttt	464

EP 1 770 171 A1

<210> 67
 <211> 533
 <212> DNA
 <213> Staphylococcus aureus

5

<400> 67
 gtgccagagt tgagattccc agggtttgaa ggcgaatggg aagagaagca gttgggggat 60
 cttacagata gagtaattag gaaaaataaa aacttagaat cgaaaaagcc tttacaata 120
 10 tccggacagt taggtttaat tgatcaaca gaatatTTTA gtAaatcagt ttcgtcgaaa 180
 aatctagaaa attatacact aataaagaat ggagaattcg cgtataacaa aagttattct 240
 aatggatacc cattaggggc tattaaaaga ttaactagat atgatatggg tgtattgtcc 300
 15 tctttgtata tttgtttttc tattaaaagt gaaatgtcta aagacttcat ggaagcatat 360
 tttgattcga cacttggtg tagagaagtt tctggaattg cagttgaggg tgcaagaaat 420
 cacggattat taaatgtttc tgtgaatgat ttttttacta ttctaattaa atatccaagt 480
 20 ttagaagaac agcaaaaaat aggcaagttc ttcagcaaac tcgaccgaca aat 533

<210> 68
 <211> 721
 <212> DNA
 <213> Staphylococcus aureus

25

<400> 68
 tgcattctcc attttaatag ctacattact atttttaagt ggtggacaag cacaagcagc 60
 30 tgagaagcaa gtgaatatgg gaaattcaca ggaggataca gttacagcac aatctattgg 120
 ggatcaacaa actaggggaaa atgctaatta tcaacgtgaa aacgggtgtg acgaacagca 180
 acatactgaa aatttaacta agaacttgca taatgataaa acaatatcag aagaaaatca 240
 35 tcgtaaaaca gatgatttga ataaagatca actaaaggat gataaaaaag catcgcttaa 300
 taataaaaaat attcaacgtg atacaacaaa aaataacaat gctaattccta gcgatgtaaa 360
 tcaagggtta gaacaggcta ttaatgatgg taaacaaagt aaagtggcgt cacagcaaca 420
 40 gtcaaaagag gcagataata gtcaagattc aaacgctaata aacaatctac cttcaciaag 480
 tcgaataaag gaagcaccat cattaaataa gttagatcaa acaagtcaac gagaaattgt 540
 taatgagaca gaaatagaga aagtacaacc acaacaaaat aatcaagcga atgataaaat 600
 45 tactaactac aattttaaca atgaacaaga agtgaaacct caaaaagacg aaaaaacact 660
 atcagtttca gatttaaaaa acaatcaaaa atcaccagta gaaccaacaa aggacaatga 720
 50 c 721

<210> 69
 <211> 416
 <212> DNA
 <213> Staphylococcus aureus

55

EP 1 770 171 A1

	<400> 69	
	ttgacagctt tgcatTTTTt taaatatagt gagccattta agtcacaaat tgtaacaccg	60
5	aaagtcactt taacgcacgc tgattgtttg tttatcgaat tgattgatga caaaggaaat	120
	gcatatttcg gggaatgtaa cgcttttcaa acagattggg atgatcatga aacaattgcc	180
	tcagtgaaac atgtaattga gcaatgggtc gaagataata gaaataaatc atttgaaacg	240
10	tatgaagcag cactaaaatt agtagattca ttggaaaata cgcttgctgc aagggaact	300
	attgtcatgg cattgtatca aatgtttcat gtactgcctt ctttttcagt agcatatgga	360
	gcgacagcga gcggcttatt aaataaacia ctagagtcac taaaagcaac aaagcc	416
15	<210> 70	
	<211> 400	
	<212> DNA	
	<213> Staphylococcus aureus	
20	<400> 70	
	gtattattgc ttgggggtgat gatgaacatc tacgtaaaat tgaagcagat gttccaattt	60
	attattatgg atttaaagat tcggatgaca tttatgctca aaatattcaa attacggata	120
25	aaggtactgc tttttagatg tatgtggatg gtgagtttta tgatcacttc ctgtctccac	180
	aatatggtga ccatacagtt ttaaattgat tagctgtaat tgcgattagt tatttagaga	240
	agctagatgt tacaatatatt aaagaagcat tagaaacggt tgggtggtgtt aaacgtcgtt	300
30	tcaatgaaac tacaattgca aatcaagtta ttgtagatga ttatgcacac catccaagag	360
	aaattagtgcc tacaattgaa acagcacgaa agaaatatcc	400
35	<210> 71	
	<211> 613	
	<212> DNA	
	<213> Staphylococcus aureus	
40	<400> 71	
	tggctatcag taatgtttcg aaagggaat acgcaaagag gtttttcttt ttcgctacta	60
	gttgcttagt gtttaacttta gttgtagttt caagtctaag tagctcagca aatgcacac	120
	aaacagataa cggcgtaaatt agaagtgggt ctgaagatcc aacagtatat agtgcaactt	180
45	caactaaaaa attacataaa gaacctgcga ctttaattaa agcgattgat ggtgatacgg	240
	ttaaattaat gtacaaaggt caaccaatga cattcagact attattgggt gatacacctg	300
	aaacaaagca tcctaaaaaa ggtgtagaga aatatgggtcc tgaagcaagt gcatttaaga	360
50	aaaaaatggt agaaaatgca aagaaaattg aagtcgagtt tgacaaaggt caaagaactg	420
	ataaatatgg acgtggctta gcgtatatatt atgtgatgg aaaaatggta aacgaagctt	480
	tagttcgtca aggcttggct aaagttgctt atgtttacaa acctaacat acacatgaac	540
55	aacatttaag aaaaagtga gacaaagcga aaaaagagaa attaaatatt tggagcgaag	600

EP 1 770 171 A1

	acaacgctga ttc	613
5	<210> 72 <211> 212 <212> DNA <213> Staphylococcus aureus	
10	<400> 72 atgggtcaagc tgctgaagtt gattacattg gtatgccagc agtatgcttt actgaacctg	60
	aattagctac agttgggttat tcagaagcgc aagctaaaga agaagggttta gcaattaaag	120
	cttctaaatt tccatatgca gcaaattggc gtgcattatc attagacgat actaacggat	180
15	ttgttaaact tattacactt aaagaagatg at	212
20	<210> 73 <211> 763 <212> DNA <213> Staphylococcus aureus	
	<400> 73 tggaagacat cgtaaacgta gaaactacgc gagaatttca gaagtattag aattaccaa	60
25	cttaatagaa attcaaacta aatcttacga gtgggttccta agagaagggt taatcgaaat	120
	gtttagagac atttctccaa ttgaagattt tactggtaat ttgtcattag agtttgtgga	180
	ttaccgttta ggagaaccaa aatatgattt agaagaatct aaaaaccgtg acgctactta	240
30	tgctgcacct ctctgtgtaa aagtgcgtct aatcattaaa gaaacaggag aagttaaaga	300
	acaagaagtc tttatgggtg atttcccatt aatgactgat acaggtagct tcgttatcaa	360
	tggtgcagaa cgtgtaatcg tatctcaatt agttcgttca ccatccgttt atttcaatga	420
35	aaaaatcgac aaaaatggtc gtgaaaacta tgatgcaaca attattccaa accgtgggtg	480
	atgggttagaa tatgaaacag atgctaaaga tgttgtatac gtacgtattg atagaacacg	540
	taaactacca ttaacagtat tgttacgtgc attaggtttc tcaagcgacc aagaaattgt	600
40	tgacctttta ggtgacaatg aatatttacg taatacttta gagaaagacg gcactgaaaa	660
	cactgaacaa gcgttattag aaatctatga acgtttacgt ccagggtgaac caccaactgt	720
45	tgaaaatgct aaaagtctat tgtattcacg tttctttgat cca	763
50	<210> 74 <211> 500 <212> DNA <213> Staphylococcus aureus	
	<400> 74 ggcagttgta ctcccacatg gtgtcttatt ccgtgggtgcc gcagaaggcg tcattcgtcg	60
	ttatttaatt gaagaaaaga actacttaga agccgtgatt ggcttaccag tgaatatattt	120
55	ctatgggaca agtattccaa catgtatctt agtatttaaa aaatggtgcc aacaagacga	180

EP 1 770 171 A1

	caacgtatta tttatcgatg catccaatga ttttgaaaaa ggaaaaaatc aaaaccattt	240
	aagcgatgcc caagtcgaac gtattattga cacatacaag cgtaaagaaa caattgataa	300
5	atacagttac agtgcgacat tacaagagat tgccgataac gattacaacc taaacatacc	360
	gaggatatgtc gatacattcg aagaagaagc gccaatgat ttagatcaag tocaacaaga	420
	tttgaaaaat atcgacaaaag aaatcgaga aattgaacaa gaaatcaatg catacctgaa	480
10	agaacttggg gtgttgaaag	500
	<210> 75	
	<211> 468	
15	<212> DNA	
	<213> Staphylococcus aureus	
	<400> 75	
	tgaatagaaa tactaggacc acaaccggtt atttttcaat agaagaaata gattcaagaa	60
20	aaagccttga tgaaagagaa acagaaaaaa agtatcctgt gaaaatgata aacaataaaa	120
	ttattccaac tgaggagata aaagatgaaa agttgaaaaa ggaaattgaa aactttaagt	180
	tttttgtgca atatggcagt tttaaaggaa tagagaatta tgaaatggt gacatttctt	240
25	ataattctga agctcctatt tattcagcga aatataaact gaaaaatgat gattataatg	300
	ttaaagaatt acgaaaaaga tataatattc caacagaaaa ggcgctaaa ttgttggtga	360
	aaggttcggg ggatttgaaa gggctctcag ttggatataa ggaaattgaa tttatattta	420
30	tagaaaataa aaaagaaaat atatattttt cagatggatt aaacttaa	468
	<210> 76	
	<211> 512	
35	<212> DNA	
	<213> Staphylococcus aureus	
	<400> 76	
	ggtgtattag ataatgaagg tatggtttta aatttggata gaaatacacg aacggccaag	60
40	ggatattatt ttgtagatac tatatatgac aatcatgaaa actcttatag taaaaattat	120
	agagttgaga tgaaaaacaa taaaattatt ttattagaca aggtggaaga tcaaaaactt	180
	aaagaaagaa tagaaaactt taaatttttc ggacaatatg ccgatttcaa gagtttgaaa	240
45	agttacaacc atggcgacgt ttcaattaat agtaatgttc caagttatga cgcgaaattt	300
	aaaatgagta ataaagatga aaatgttaag caattaagaa gccgttataa cattcctact	360
	gataaagctc caatattaaa aatgcatatt gatggggact taaaaggcag ttccgttgga	420
50	tataaaaagt tagaaataga cttttcaaaa gaagaaaata gcgaattatc aatagtcgat	480
	tcattaaatt ttcaacctgc caaaaataaa ga	512
55	<210> 77	
	<211> 502	

EP 1 770 171 A1

<212> DNA
<213> Staphylococcus aureus

<400> 77

5	aacccaaagg cgagagttta aaatcacgag gaatgatatt aaagttagat agaaataaga	60
	gaactgctaa aggaagttat attattagag aattgaaaga agataaaaaat catgatgttc	120
	aaaaaaatga aaagaaatat ccagtgaat tggatgaataa taggatagtt ttggtaaaag	180
10	atgttaaaga caaaaagtta aaaaatgaaa tagagtcgtt tgaattatct tcacaatatg	240
	gaaactttta tcattttgat cggaatgaga ttactaatat ttcataataat cctaattgctc	300
	ccaattactc tgcagaatat aaaatgaaga aaaatgacag aaacattcaa cagttgaaaa	360
15	agagatttta tctaaaaact agcaagacac caaaattatt gttaaaggga tctggagata	420
	taaaggggtc ttctgtagga tataaggaaa tagaaatcat atttagtaga agtaaagaag	480
20	aagcatttat tatgttgaca gc	502

<210> 78
<211> 400
<212> DNA
<213> Staphylococcus aureus

<400> 78

25	gcgaaagagt cgaaatcagc taatgaaatt tcacctgagc aaattaacca atggattaaa	60
	gaacaccaag aaaaataagaa tacagatgca caggataagt tagttaaaca ttaccaaaaa	120
30	ctaattgagt cattggcata taaatattct aaaggacaat cacatcacga agatttagtt	180
	caagttggta tggttgggtt aatagggtgcc ataaatagat tcgatatgtc ctttgaacgg	240
	aagtttgaag cttttttagt acctactgta atcgggtgaaa tcaaaagata tctacgagat	300
35	aaaacttggg gtgtacatgt tccgagacgt attaaagaaa ttggggccaag aatcaaaaaa	360
	gtgagcgatg aactaacgcg tgaattagag cgttcacctt	400

<210> 79
<211> 529
<212> DNA
<213> Staphylococcus aureus

<400> 79

40	ccgttacgtt gttcttcagt taagttaggt aaatgtaaaa tttcatagaa agcattttgt	60
	tgttctttgt tgaatttggt gtcagctttt ggtgcttggt catcatttag ctttttagct	120
	tctgctaaaa ggttagcgct ttggcttggg tcatctttta agctttggat gaaaccattg	180
50	cggtgttctt cgtttaagtt aggtaaatgt aagatttcat agaaagcatt ttgttggtct	240
	ttgttgaatt tgttatccgc ttctcggtgct tgagattcat ttaacttttt agcttctgac	300
	aatagggttag cactttgact tgggtcatct tttaagcttt ggatgaaacc attgcgttgt	360
55	tcttcgttca agttaggcat gttcaagatt tcatagaaag ctttttggtt ttctttgttg	420

EP 1 770 171 A1

aaattgttgt cagctttcgg tgcttgagat tcgtttaatt ttttagcttc acctaaaacg 480
 ttagtgcttt ggcttggatc gtctttaaga ctttgaatga aaccattgc 529
 5
 <210> 80
 <211> 528
 <212> DNA
 <213> Staphylococcus aureus
 10
 <400> 80
 tgatattgga agatattagc atagatatcg aaaaaggtaa attgacttct ttaattggac 60
 ctaatggtgc gggaagagt actttacttt cagcgatttg taggttaatt cgttttgata 120
 15
 acggtgaagt gaaaatagat ggacggctca tgtctgatta taaaaataat gacttgctga 180
 aaaaaatata tatattaaaa caaacaaacc atactgaaat gaatattacg gtagagcagt 240
 tggtaaaactg tggacgattc ccttattcta aaggctgctt gacgaaagag gatcatgata 300
 20
 ttgtcaatga tgcgctagat ttgttgcaac tacaagatat cagaaatcgt aatattaagt 360
 cattatctgg tggacaacgt cagcgtgcat atattgcaat gacaatagca caagatactg 420
 aatatatattt gctagatgaa ccattaaata atttagatat gaagcatgct gttcaaatta 480
 25
 tgcaaacggt aaaaatgtta gcgcataaaa tgaataaagc gattgtca 528
 <210> 81
 <211> 513
 <212> DNA
 <213> Staphylococcus aureus
 30
 <400> 81
 ttttgattta tcttctgacg gttaaaaata accattcttt acccattctt cataacgtcc 60
 35
 cgcttcaact tcacgaggat catatcttgg ttccatttcc atttgctata cctcctaaaa 120
 aaataaaaaat atccatccta tatacaata ggaaggatat tccgtggtac cacctatatt 180
 caagaaggat gattaatatc aaattcactc ttttaacata attggaataa tcataccaat 240
 40
 actatcatcg tgaatttga aatgcttcat ctcttcaagc actctagatt atgattaacg 300
 ctcaaacacg tcttagccta ctattaatca cgttcagcta agatactctg tgggctacct 360
 tcagtaagaa aatcatttac ataactcacac caaatcatat gctctcttta aaataatttg 420
 45
 aacttactct tcccaaatac tatattaaac tcttaactta tagtataatg attgacaaaa 480
 taagtcaatg tatagggtggg aataaaatga atg 513
 50
 <210> 82
 <211> 361
 <212> DNA
 <213> Staphylococcus aureus
 55
 <400> 82
 tggatataac aatcaaaaac actcaatgct tgcataccgc gttctcggtc agtaggggttt 60

EP 1 770 171 A1

	ttgaaactaa tttttaaaagc accgtatata tcttcgcgta cttctaagat tcttaagttg	120
5	cttatagata tgttatgtaa actcaggata taagtcactt tacttatcat acctgattca	180
	tccggaatgt ctacatatag atcatatcgca gtatttagtc cacctagttg ttttagcgggt	240
	agtgcgctgc gatacgattt agcttgggca aaaaatgata acaatttttc agaatcattg	300
10	ctttcaatta gtctttctaa atcttgaaac tgacttttta gctgtcgaat catttctaaa	360
	a	361
15	<210> 83 <211> 731 <212> DNA <213> Staphylococcus aureus	
20	<400> 83 atgagatacc taacatcagg agaatcacat ggacctcaat taacagttat tgttgaaggt	60
	gtacctgcaa atttagaagt taaggttgag gatattaata aagaaatggt taagcgtcaa	120
	ggcggttacg gacgtggacg tcgtatgcaa attgaaaaag atacagtga gattgtttcg	180
25	ggtgtaagaa atggttatac attaggtagc cctattacaa tgggtgttac taatgatgat	240
	tttacacatt ggcgaaaaat tatgggccgt gcgccaataa gcgacgaaga acgagaaaaat	300
	atgaaacgta caattacgaa gccaaagaccg ggacatgcag atttacttgg cgggtatgaaa	360
30	tataatcadc gtgacttacg aaatgtatta gaaogttcat ctgccagaga aacagcagca	420
	cgtgtagcgg tcggtgcact atgcaaagtt ttattagaac aattagatat cgaaatatac	480
	agtcgtgttg ttgagatagg tggcattaaa gataaagatt tttatgattc agaaacattt	540
35	aaagcaaacc ttgatcgaaa tgacgtccgt gtaattgatg atggcatcgc acaagcaatg	600
	cgcgataaaa ttgatgaagc gaaaacagat ggtgattcaa tagggggcgt agttcaagtt	660
	gtagttgaaa atatgcctgt tgggtgtaggt agttatgtac attatgatcg taaattagat	720
40	ggaagaatag c	731
45	<210> 84 <211> 254 <212> DNA <213> Staphylococcus aureus	
50	<400> 84 accttcaata ttcgcatcca taagtttcaa tgggtctcaag acacgatcca ttggcctttt	60
	accaattgaa acatcgccag acaaaacact ttcaatacct aaaccactta acaaaccagc	120
	taacaatcga gtcgttgtgc cagagtttcc agtatataaa acttgatgag gtgtttttaa	180
	agctttatat ccagggtgaat tcacaaccaa tttatcttca tcttctttta tatctacgcc	240
55	taataatcgg aata	254

EP 1 770 171 A1

<210> 85
 <211> 716
 <212> DNA
 5 <213> Staphylococcus aureus

<400> 85
 tcgaggaatt aacaaaggtc aaaggttata caacacatgt ggataacaat gatatgggca 60
 10 acttgattgt gacgaataaa tatacgccag aaacaacatc aattagtggt gaaaaagtat 120
 gggacgacaa agacaatcaa gatggtaaga gaccagaaaa agtcagtggt aatttatttg 180
 ctaacggaga gaaagtaaaa acgttagacg tgacatctga acaaaactgg aagtacgaat 240
 15 ttaaagactt accgaagtat gatgaaggaa agaaaataga atatacagt accgaagatc 300
 acgtaaaaga ctacacaaca gacatcaacg gtacgacaat aacgaacaag tatacaccag 360
 gagagacatc ggcaacagta acaaaaaatt gggatgacaa taataacca gacggaaaac 420
 20 gaccaactga aatcaaagtt gagtttatatc aagatggaaa agcaacagga aaaacggcaa 480
 tattaaatga atctaataac tggacacata cgtggacagg attagatgaa aaagcaaaag 540
 gacaacaagt aaaatacaca gtcgatgaat taacaaaagt taatggctat acaacgcatg 600
 25 tggataacaa tgatatgggt aacttgattg tgacaaataa atatacgccg aaaaaaccga 660
 ataaaccaat ctatcctgaa aaacccaaaag acaaacacc accaactaaa cctgat 716

30 <210> 86
 <211> 581
 <212> DNA
 <213> Staphylococcus aureus

<400> 86
 35 gaacctagcc atcaagacag tacacctcaa catgaagagg aatattataa taagaatgct 60
 tttgcaatgg ataaatcaca tccagaacca atcgaagaca atgataaaca cgatactatt 120
 aaaaatgcag aaaataacac tgagcattca acagtttctg ataagagtga agctgaacaa 180
 40 tctcagcaac ctaaaccata ttttacaaca ggtgctaacc aatcagaaac atcaaaaaat 240
 gaacatgata atgattctgt aaaacaagat caagatgaac ctaaagaaca tcataatgggt 300
 aaaaaagcag cagctattgg tgctggaaca gcagggtgtg cagggtgcagc tgggtgcaatg 360
 45 gctgcttcta aagctaagaa acattcaa atgacgctcaa acaaaagtaa ttctggcaag 420
 gcgaataact cgactgagga taaagcgtct caagataagt ctaaagatca tcataatggc 480
 aaaaaaggtg cagcgatcgg tgctggaaca gcagggttgg ctggaggcgc agcaagtaaa 540
 50 agtgcttctg ccgcttcaaa accacatgcc tctaataatg c 581

55 <210> 87
 <211> 530
 <212> DNA
 <213> Staphylococcus aureus

EP 1 770 171 A1

	<400> 87	
	tcgtgcatta gtaccatcag gtgcttcaac tggatgaacac gaagctgttg aattacgtga	60
5	tggagataaa tcacgttatt taggtaaagg tgttactaaa gcagttgaaa acgttaaatga	120
	aatcatcgca ccagaaatta ttgaagggtga attttcagta ttagatcaag tatctattga	180
	taaaatgatg atcgcattag acggtactcc aaacaaagggt aaattagggtg caaatgctat	240
10	tttaggtgta tctattgcag tagcacgtgc agcagctgac ttattagggtc aaccacttta	300
	caaatatttta ggtggatttta atggtaagca gttaccagta ccaatgatga acatcgttaa	360
	tgggtggttct cactcagatg ctccaattgc attccaagaa ttcattgattt tacctgtagg	420
15	tgctacaacg ttcaaagaat cattacgttg ggggtactgaa attttccaca acttaaaatc	480
	aattttaagc aaacgtggtt tagaaactgc agtaggtgac gaagggtggtt	530
20	<210> 88	
	<211> 560	
	<212> DNA	
	<213> Staphylococcus aureus	
25	<400> 88	
	cgccaaaata gtgcttcaat atcagatagt tattattggg atatcattaa aaatctagaa	60
	ttacaatttta ctgctgcatt agatttatta gaagattatc gatattggtga aaaagagtat	120
	gaaaaagcaa aagatcaact aatgacaagg atattaagtg aagtcaagta tttacttgag	180
30	caaaaaatta aagaatatga caagtataaa gatttatata aagaatatat gagtaaaaaat	240
	ccaacgtcaa aggtaaaaag agcaaathtt gatcaatata atatcgaaga cctaagagaa	300
	aaagaatata atgatttact aagttctatt aaagatgcgg tagaaacatt taaatcagat	360
35	gtacaaaaaa tagaatatga aaataaagag ttaaaatctt attcttacga agaagaaaag	420
	aaggctgctt ctagagttga tgatttagca aataaagcgt atagcgttta ttttgcgttt	480
40	gtaggggata cacaacataa aactgaggca ttagagttaa aagcgaaagt ggatttagtt	540
	ttaggtgatg aggacaaacc	560
45	<210> 89	
	<211> 462	
	<212> DNA	
	<213> Staphylococcus aureus	
50	<400> 89	
	tgaaaaataa attgatagca aaatctttat taacaatagc ggcaattggt attactacaa	60
	ctacaattgc gtcaacagca gatgcgagcg aaggatacgg tccaagagaa aagaaaccag	120
	tgagtattaa tcacaatatc gtagagtaca atgatggtac ttttaaatat caatctagac	180
	caaaatttaa ctcaacacct aaatatatta aattcaaaca tgactataat attttagaat	240
55	ttaacgatgg tacattcgaa tatgggtgcac gtccacaatt taataaacca gcagcgaaaa	300

EP 1 770 171 A1

ctgatgcaac tattaaaaaa gaacaaaaat tgattcaagc tcaaaatctt gtgagagaat 360
 5 ttgaaaaaac acatactgtc agtgcacaca gaaaagcaca aaaggcagtc aacttagttt 420
 cgtttgaata caaagtgaag aaaatgggtct tacaagagcg aa 462

 10 <210> 90
 <211> 584
 <212> DNA
 <213> Staphylococcus aureus

 15 <400> 90
 aatcctcata acgcagaaag agtaaccttg aaatataaat ggaaatttgg agaaggaatt 60
 aaggcgggag attatatttga tttcacatta agcgataatg ttgaaactca tggatatctca 120
 acactgcgta aagttccgga gataaaaagt acagatgggtc aagttatggc gacaggagaa 180
 ataattggag aaagaaaagt tagatatacg tttaaagaat atgtacaaga aaagaaagat 240
 20 ttaactgctg aattatcttt aaatctatth attgatccta caacagtgc gcaaaaagggt 300
 aacaaaaatg ttgaagttaa attgggtgag actacgggta gcaaaatatt taatattcaa 360
 tatttaggtg gagttagaga taattgggga gtaacagcta atggtcgaat tgatacttta 420
 25 aataaagtag atgggaaatt tagtcatttt gcgtacatga aacctaacaa ccagtcgtta 480
 agctctgtga cagtaactgg tcaagtaact aaaggaaata aaccaggggt taataatcca 540
 30 acagttaagg tatataaaca cattgggttca gacgatttag ctga 584

 35 <210> 91
 <211> 545
 <212> DNA
 <213> Staphylococcus aureus

 40 <400> 91
 gctgggtgtg tacttatcct agtggcagca tatttgtttg cttaaaccaca tatcgataat 60
 tatcttcacg ataaagataa agatgaaaag attgaacaat atgataaaaa tgtaaaagaa 120
 caggcgagta aagataaaaa gcagcaagct aaacctcaaa ttccgaaaga taaatcgaaa 180
 gtggcaggct atattgaaat tccagatgct gatattaaag aaccagtata tccaggacca 240
 45 gcaacacctg aacaattaaa tagaggtgta agctttgcag aagaaaatga atcactagat 300
 gatcaaaaata tttcaattgc aggcacacact ttcattgacc gtccgaacta tcaatttaca 360
 aatcttaaag cagccaaaaa aggtagtatg gtgtacttta aagttggtaa tgaaacacgt 420
 50 aagtataaaa tgacaagtat aagagatggt aagcctacag atgtaggagt tctagatgaa 480
 caaaaaggta aagataaaca attaacatta attacttgtg atgattacaa tgaaaagaca 540
 ggcgt 545
 55 <210> 92

EP 1 770 171 A1

<211> 527
<212> DNA
<213> Staphylococcus aureus

5 <400> 92
ttaacaatag aacatttaac aaagaagata ggcaacaaaa cgattctcga agatgtatca 60
ttaaagctga aacgcggaca aatagttggt ctcgttggag cgaatggtgc aggtaaaaca 120
10 actttaatga aagttatatt aggttactct agtttccaaa gcgggaattt taatgttatt 180
aacagcaagg acgaaaaaag caatatcggc gcattgattg aaaatccagg aatataatcct 240
tttatgtctg gatatgaaaa cttgaagtta ttgaatgaat caaaaaacac tcaagatatc 300
15 gataaaattg tctcacaact tcatatggat gaatacattc ataaaaaagc taaaacgtat 360
tctcttggtg tgaacaaaaa attaggaatt gctatagcat ttttaaataa acctcaattc 420
attatcttag atgaaccaat gaatggctta gatccaaaag ctgtgcgaga tgtacgtgaa 480
20 ttgattgtcc aaaaagcgca agaaggtggt actttcttaa tttcgag 527

<210> 93
<211> 645
<212> DNA
<213> Staphylococcus aureus

25 <400> 93
aaatggttca gtcgtaatgg cgacagggtga agtttttagaa ggtggaaaga ttagatatac 60
30 atttacaaat gatattgaag ataagggttga tgtaacggct gaactagaaa ttaatttatt 120
tattgatcct aaaactgtac aaactaatgg aaatcaaact ataacttcaa cactaaatga 180
agaacaaact tcaaaggaat tagatgttaa atataaagat ggtattggga attattatgc 240
35 caattttaat ggatcgattg agacatttaa taaagcgaat aatagatttt cgcatgttgc 300
atttattaaa cctaataatg gtaaaacgac aagtgtgact gttactggaa ctttaatgaa 360
aggtagtaat cagaatggaa atcaacaaa agttaggata tttgaatact tgggtaataa 420
40 tgaagacata gcgaagagtg tatatgcaaa tacgacagat acttctaaat ttaaagaagt 480
cacaagtaat atgagtggga atttgaattt acaaaataat ggaagctatt cattgaatat 540
agaaaaatcta gataaaactt atgttggttca ctatgatgga gagtatttaa atggtactga 600
45 tgaagttgat tttagaacac aaatggtagg acatccagag caact 645

<210> 94
<211> 548
<212> DNA
<213> Staphylococcus aureus

50 <400> 94
ggtattgcat ctgtaacttt aggtacatta cttatatctg gtggcgtaac acctgctgca 60
55 aatgctgcgc aacacgatga agctcaacaa aatgcttttt atcaagtgtt aaatatgctt 120

EP 1 770 171 A1

	aacttaaacg ctgatcaacg taatgggtttt atccaaagcc ttaaagatga tccaagccaa	180
	agtgcctaacg ttttaggtga agctcaaaaa cttaatgact ctcaagctcc aaaagctgat	240
5	gcgcaacaaa ataagttcaa caaagatcaa caaagcgcct tctatgaaat cttgaacatg	300
	cctaacttaa acgaagagca acgcaatggg ttcatcctaaa gtcttaaaga cgatccaagc	360
	caaagcacta acgttttagg tgaagctaaa aaattaaacg aatctcaagc accgaaagct	420
10	gacaacaatt tcaacaaaga acaacaaaat gctttctatg aaatcttgaa catgcctaac	480
	ttgaacgaag aacaacgcaa tggtttcctc caaagcttaa aagatgacct aagtcaaagt	540
	gctaacct	548
15		
	<210> 95	
	<211> 304	
	<212> DNA	
	<213> Staphylococcus aureus	
20		
	<400> 95	
	gttatcaatt aatacaaccc ctgaagcaat tcgatacatt aaacctgcag attttcatgt	60
	tcctggcgat atttcatctg cagcgttctt tattgttgca gcaattatca caccaggaag	120
25	tgatgtaaca attcataatg ttggaatcaa tccaacacgt tcaggtatta ttgatattgt	180
	tgaaaaaatg ggcggttaata tccaactttt caatcaaaca actgggtgctg aacctactgc	240
	ttctattcgt attcaataca caccaatgct tcaaccaata acaatcgaag gagaattagt	300
30	tcca	304
	<210> 96	
	<211> 269	
35	<212> DNA	
	<213> Staphylococcus aureus	
	<400> 96	
	gtagttgaaa atatgcctgt tgggtgtaggt agttatgtac attatgatcg taaattagat	60
40	ggaagaatag cacaggggtgt cgtaggtatt aatgcattta aagggtgaag ttttgagaa	120
	ggatttaaag cagctgaaaa gcctggtagc gaaattcaag acgaaattct ctacaatact	180
	gaattgggct attatcgtgg gtcaaatac ttaggtggtt tagaaggcgg tatgtcaa	240
45	ggaatgcaa ttatcgtaa tgggtgta	269
	<210> 97	
	<211> 305	
50	<212> DNA	
	<213> Staphylococcus aureus	
	<400> 97	
	agacttatta tctaaacgtg gtgaactagc acaaaaaatt ggggaagaaa aattaaaaca	60
55	aggtacacgt atctatgatc cacaacgtga aaaagaaatg cttaacgact taatcgatag	120

EP 1 770 171 A1

	taacaaagga ccattcaacg ataatactat taagcaatta tttaaagaaa ttttcaaagc	180
	ctctacagat ttacaaaaat ctgaaaatga aaaacattta tatgtatcac gtaagttgaa	240
5	acctgaagat acgattgtaa catttgataa tgggggcatt attggagacg gcaataaatc	300
	atttg	305
10	<210> 98 <211> 287 <212> DNA <213> Staphylococcus aureus	
15	<400> 98 aaaattgctg gtatcgctgc acgtgaagtt aaaggtatct tagacatgaa aggtggctta	60
	actgatacat tcaactaatgc attctcaagt ggaaataacg ttactcaagg tgtatctgtt	120
	gaagttggtg aaaaacaagc tgctgtagac ttaaaagtaa ttttagaata tggatgaatca	180
20	gcacctaaaa tcttccgtaa agtaactgaa ttagtaaaag aacaagttaa atatattact	240
	ggtttagatg ttgttgaagt taacatgcaa gttgacgatg taatgac	287
25	<210> 99 <211> 429 <212> DNA <213> Staphylococcus aureus	
30	<400> 99 agctgagacg acacaagatc aaactactaa taaaaacggt ttagatagta ataaagttaa	60
	agcaactact gaacaagcaa aagctgaggt aaaaaatcca acgcaaaaca tttctggcac	120
	tcaagtatat caagaccctg ctattgtcca accaaaaaca gcaaataaca aaacaggcaa	180
35	tgctcaagta agtcaaaaag ttgatactgc acaagtaa at ggtgacactc gtgctaataca	240
	atcagcgact acaaataata cgcagcctgt tgcaaagtca acaagcacta cagcacctaa	300
	aactaacact aatgttacia atgctgggta tagtttagtt gatgatgaag atgataattc	360
40	agaaaatcaa attaattccag aattaattaa atcagctgct aaacctgcag ctcttgaaac	420
	gcaatataa	429
45	<210> 100 <211> 536 <212> DNA <213> Staphylococcus aureus	
50	<400> 100 cgggattctc tgcattatcc cccacggcaa caccocaaat aaactcttca atgttaaaaa	60
	caagacacaa atgactgata atactaagtt tattaatatt gatacgaaca caccaaagta	120
	tcgagttaat aaaaagttga gcggtatcaa tggtagagat actacatata tcaacaatat	180
55	tgtcaccaat aacaacatag cattaaccgg atgtggatta ataattaggt cacctatata	240

EP 1 770 171 A1

	agcaataata aataactaaaa agcaatgtac caaaaatgct attgataaaa tgaaaatctt	300
	tgctcttatt tcttttgtaa tcgaccaatt attacttaag taataattaa atgatttatt	360
5	tctcatttca attttaaata acgaattaca agccatacat aatacaatcg ggatgaaagc	420
	aattggccaa atattaaata gtaaagttat atatgggtgac acactattcg ctgttcccg	480
	attacttttg gcgaataaga ctgtgaaaat agcaaaacaa agaaatacca ggggac	536
10	<210> 101 <211> 637 <212> DNA <213> Staphylococcus aureus	
15	<400> 101 ttaattgttc taccgctcca tttattaaat cttttaaaga gtaaaactgc taatagcaac	
	gtgataataa tatagattgc caatgttaat gtaactggta tactcccttc gataaacata	120
20	taaacgtaac gtgtagcata tgtgattggg aatagaacc acgaatgatc tccaagcact	180
	tctaatecaa aataaacgtt aaaaaataaac attaaaactc cgacaacaat agccattaca	240
	tctttaatga aaatactaaa aataaaaagt agcagtaata taattacatt gaaaaacaat	300
25	gatacgcta taaacataag tgttattttc atatcatgtg aatgccacaa taaattaatt	360
	gatgctaata gaatacatat ggctgtaata gtataagtaa aaatcattga tgcatttaac	420
	caatttagcc tattagcttt tcctaaaata tgattaaagt gaccaatatt ttcttcaaaa	480
30	ttgataactt gatagacgtt tatagaaatt aatagcgatg taattgcatt aaaactcgct	540
	gtaaacaaac ttatttgcg accattccat aaatttacgt ttaaatacca atttataaat	600
	aatataaaca atatgggttac aataatgggt acaaatg	637
35	<210> 102 <211> 507 <212> DNA <213> Staphylococcus aureus	
40	<400> 102 aaagataatt ggtttgctga aaaaccagtc ctotaaagaa tcgaatgtta agattcatcg	
	cttggcgtat attacaaact caaaatttga tggcaataac tatatagata gatgggtgtaa	120
45	aatcaggaat tctcacattg gtgaatacag ttatatggga tttggtagtg attttaataa	180
	tgtagaagta ggaagatatt gttcgatata ttcggatgta aaaattgggt taggaaaaca	240
	tctacacac ttttttagct catcacgat tttttattct aataataatc catttaacat	300
50	aaagcaaaag tttatagact ttaatgacca accaagccgt acaacaatta aaaatgatgt	360
	gtggattggg gcaaatgtaa ttattatgga tgggttaaca ataaatactg gtgcagtcac	420
	agcagccggc tcagttgtta ctaaaaatgt aggagcatat gaggttggtg gtgggggtcc	480
55	tgcaaaagtg attaagaagc gatttga	507

EP 1 770 171 A1

5 <210> 103
 <211> 639
 <212> DNA
 <213> Staphylococcus aureus

10 <400> 103
 caaggggtact taaacaaata gaaacaatta aagacggttac ggatgattat aaaattggtg 60
 gaatgaataa ttcacaagct actaataagc gattggaaaa tttagattgt aattatcggt 120
 tgttaggtag caaggtagat ccaaaaaata ttcttttctaa attaattaag cgtataagat 180
 ttgcaacagg tgttatccga gaaattaaag cttataaacc tgacgtgatt catgcaaagt 240
 15 atttcgacgt attattaatg gtctatttaa gcaattataa aaaagctaatt attgtttatg 300
 atgcgcatga aatatatgag aaaaatgcct ttattaataa agttccactt atttcaaagt 360
 ttgtagaaaag tatagaaaaa cacatagtaa aacatcgtgt taatgccttc gtaacagtaa 420
 20 gtcattgcagc aaaagaatat tatcaatcta aaggatataa gaaggaagcg aatgttatta 480
 cgaatgcacc tattttaaatt gatagcagag aatttaaaga aatcgaaaac tttaaagaaa 540
 25 ttgtatatca aggtcaaatt gtaatggaca gaggatatga agagtttatt attgcttcatt 600
 cagcttttaa acaaaatgct ccttcattca taattcgag 639

30 <210> 104
 <211> 380
 <212> DNA
 <213> Staphylococcus aureus

35 <400> 104
 actttgtgca attatcagca tgaacatatt tatagtaatc tctacattta ctaaagaagt 60
 attaggggttc cctatagagc cgggtgtatta ctcaaccatg gttggtatag cattaattac 120
 cacgggtgttt gctatttata agataattgt cacgcaagaa attccgagag ggtaaatatt 180
 40 attaatgtct atatgtttgc tttatctagc tttttattat ttttcaccag ataaggaaga 240
 gaaactagct aaaaataata ttctattctt tttaacatgg gcagttccag cggcaattag 300
 tggatatttat attaaatata taaacaaggc tacggtagaa agatttttta aattagtatt 360
 45 tttcatattt tctgtttcat 380

50 <210> 105
 <211> 500
 <212> DNA
 <213> Staphylococcus aureus

55 <400> 105
 ttatggatag cgtaaagaca ataattggta cgttgcttat agcttttaga ttacaatttt 60
 tagcttatcc aattattaat caacgagtag gtaatgaagc gtttggttct attttaacga 120
 tttatacaat aataacaatc acgagtgttg tattaggcaa tacgcttaac aatatacgat 180

EP 1 770 171 A1

	tgattaatat gaatctatac aaatccaatc attactactg gaaatttgtg tcgatacttt	240
5	taatttcaat tctgattgag agtatagctt taattattgt atttctttac ttttttaatt	300
	tgaacacccat cgatattatc tttttaattc tacttaatat tttaatgtgt ttaaggattt	360
	atctgaatgt attttttagg atgactttaa aatataatca gattttgtat attgctctta	420
10	ttcaattttt aggtttgctg ataggactat ttctatatta tttaatccaa aactggattg	480
	tttgttttat taccagtga	500
15	<210> 106 <211> 522 <212> DNA <213> Staphylococcus aureus	
20	<400> 106 gattcttggc gctactaaca ttaagcatat gtcattatta tcacattatt taaaccacat	60
	tgatttgaat atcaatgagg tggacattat atacactgac aaatatgata tcgaagaaca	120
	tatccaaggc atcaataatt actataaata taaagtagat attaaagaag attggacatt	180
25	tatcaaaaaa gctattgctt actatcgatt taggccatac gctatgaaaa ttcttaaaga	240
	aaatcgttat gattttgtca tagtatgggg aagttataca ggacacttat ttaaaagttt	300
	tttagaaaaa cactataaaa ataaattcat tttaaatata agggactact tttttgaaaa	360
30	taataaaactt attaagtata gaatgaaaaa aatogttgat gctagcaggg tgacaacatt	420
	atcttcagaa ggttttctta aatttttacc taaatctgaa aaatatagaa ttatttatag	480
	ttataacatg agtattatta gagaaagtaa tgtaaccgat gg	522
35	<210> 107 <211> 655 <212> DNA <213> Staphylococcus aureus	
40	<400> 107 taatgtttcc ttgccttatg ttaggtgata aacctttatt attttttagca cctataagtt	60
	atggagtagg aaagctcttt ataagcttct cgaataatcc gaattttaaa ttttcgaaaa	120
45	ttgtatacga tgttttaggt tttcttagat tagtatttat acctgctatg atagtgtttt	180
	tccaggattc aactatagat aatttaccat taggacaagc ttattttaat caagcggtta	240
	tttatatgag tgtggagttt atcataggct cgctatttat attgatacta tctaaattat	300
50	tcaaacatga agtggatatca agaaatagct ttacactttc tggatcatca atttattaca	360
	ttgtgtttgg tcttgttatt tgtgggattt ttgtagcttt tcccgaagtg cgcaaaaaca	420
	tatcattttt aattattaaa acagatgcaa tgggaagagg aaccgaagca acaagtgttt	480
55	taaatgttct ttttgtaatg ctatttcaac ttgccttagc gttattattc ttaataatcg	540

EP 1 770 171 A1

	catatgcttc atataaaaag tataaagaga atcctaaaat tatttatgtt gtattaccgc	600
	tagctatagg aatttttaaat attagtttaa ttgttggtga aagaagaagt tatca	655
5	<210> 108 <211> 459 <212> DNA <213> Staphylococcus aureus	
10	<400> 108 gtaaaaacat ttatgaaatc gaaaatattt agattaatga atacaccact attattattt	60
	tataagaaaag aatattttaac tggatattat ttgaaaata aagtggctgg atggttatgg	120
15	gcgtggaaag ctgttcggtt caagttgtta ggaataaata caagtttgcc atttcctgca	180
	gatataactg ttagaatgca taaccctaata aacattgttt ttgataaaaa tgatattcat	240
	atTTTTcaat cgcccgggac gtatttttaata aatttttcag cagttatata tataggtaga	300
20	ggtgtttata tagcgcttaa cgtaggtatt attacagcta atcataatat taaaaatttg	360
	aagtcacatg caccaggtga agatgtcaaa atagggaatt atagttggat tggaatgaac	420
	tcagttatat taccaggagt agaattgggg gaacataca	459
25	<210> 109 <211> 562 <212> DNA <213> Staphylococcus aureus	
30	<400> 109 aagatacgat ttgttgattg tgaataccaa aaatgaccgt agtgctaata tactttcaca	60
	aatcagtttt ttgatatcat tgcttattttt attaatactg ataccaatat ttgcgattag	120
35	tgcatgttta tacccaaact ttatattaga ttttattttc attattatta tgttgttttt	180
	ggtaagttta acaaacattt ttacaaatta tctaaataag gaaagaaagt ataaagtgtt	240
	aagtttgatt aatgtgttta gagctggatc aatggcttta cttcaaata ttttcggact	300
40	tttagcatta ggaagtttag gattaattat tggtttttca ttatcctata tcgcaggcat	360
	tacactagga tataaaacgt ttaaaaagca ctttaatat gtgagagata aagaagaaac	420
	taaagcatta tttttagaaa ataaaaatca gttagtttat tcaacaccat caatattatt	480
45	aaatagtttg tctttctcgg ttgttgtgtt ctttataggt attttgtata ccaatacaga	540
	agtgggtatt tatggtatgg cc	562
50	<210> 110 <211> 104 <212> DNA <213> Staphylococcus aureus	
55	<400> 110 ttttatctta attaaggaag gagtgatttc aatggcacia gatatcattt caacaatcag	60

EP 1 770 171 A1

	tgacttagta aaatggatta tcgacacagt gaacaaattc acta	104
5	<210> 111 <211> 351 <212> DNA <213> Staphylococcus aureus	
10	<400> 111 aaatatcaaa tcgctgtggc tgatacgaat gttcaaacgc cagattatga aaagttgagg	60
	aacacatggc tggacgttaa ctatggttat gataagtatg atgagaagaa tgacgcaatg	120
	aagaagaagt ttgaggctac ggagaatgag gcaaagaaat tacttagtga gatgaaaact	180
15	gaaagtgata ggaaatactt gtgggaaaac tcaaagatt tagatacgaa gtctgcggtat	240
	atgactcgta cctatcgtaa tattgagaaa atcgcagaag cgatgaagca taaagatact	300
	aagttaaaaa tagatgaaaa caagaagaaa gtgaaagatg cccttgagtg g	351
20	<210> 112 <211> 278 <212> DNA <213> Staphylococcus aureus	
25	<400> 112 ggggttcttgc tgtctttaag tgattcagag aatacttctt gtgcacgttc tgggtgttcg	60
	cgtaatgttt tgatgtattg gttacgttgt tcttctgtga taccttttag atgtaatact	120
30	tgataaaaag ctttttggtg atctgttacg tagttgtttt gagttgtttg gtgcttagtt	180
	gaagtttggt gcgtgttttc actcgctttt gcttcccat ttgaaatcat tgtagctaaa	240
	gtaattgttg ctgccccaac tagcaacttc gagatata	278
35	<210> 113 <211> 226 <212> DNA <213> Staphylococcus aureus	
40	<400> 113 aaagatagtt ctaagataaa tgggtccatta agactcgag gtggagatat taataagcta	60
	gattcaacaa ctcaagacaa agtaagaaga ttagattcat ctatttctaa atctactact	120
45	cctgaatctg tatacgttta tagactttta aatttagatt atttgacaag tatcgttgga	180
	tttacaaatg aagatttata taaattacaa cagaccaata atggcc	226
50	<210> 114 <211> 576 <212> DNA <213> Staphylococcus aureus	
55	<400> 114 gctagtgcatt ttgttattca agacgaactg atgcaaaaaa accatgcaaa agcagaagtt	60
	tcagcagaag aaataaaaaa acatgaagag aaatggaata agtactatgg tgtcaatgca	120

EP 1 770 171 A1

	tttaattttac caaaagagct ttttagtaaa gttgatgaaa aagatagaca aaagtatcca	180
5	tataatacta taggtaatgt ttttgtaaaa ggacaaacaa gtgcaactgg tgtgttaatt	240
	ggaaaaaata cagttctaac aaatagacat atcgctaaat ttgctaattg agatccatct	300
	aaagtatctt ttagaccttc tataaataca gatgataacg gtaatactga aacaccatat	360
10	ggagagtatg aagtcaaaga aatattacaa gaaccatttg gtgcagggtg tgatttagca	420
	ttaatcagat taaaaccaga tcaaaacggt gtttcattag gcgataaaat atcgccagca	480
	aaaataggga catctaataa tttaaaagat ggagacaaac tcgaattaat aggctatcca	540
15	ttcgatcata aagttaacca aatgcacaga agtgaa	576
	<210> 115	
	<211> 630	
	<212> DNA	
20	<213> Staphylococcus aureus	
	<400> 115	
	ttttagcagc gtcaatTTTT actatttccT tacctgtgat tccttttgaa agtacattac	60
25	aagcaaaaga atacagcgca gaagaaatca gaaaattaaa acaaaaattt gaggttccac	120
	ctacagataa agagctttat acacacatta cggataatgc aagaagtcct tataattctg	180
	ttggtacagt gtttgtcaaa ggtagtacat tagctaccgg agtttttaatt ggtaaaaata	240
30	caattgttac taattaccac gttgcaagag aagcagccaa aaaccatcg aatattattt	300
	ttacaccgcg tcaaaataga gatgcagaaa aaaatgaatt cctactccg tatggaaaat	360
	ttgaagctga agaaattaaa gaatctccgt atggacaagg actcgattta gctataataa	420
35	aattaaaacc aaacgaaaaa ggggaatcag cgggagattt aattcaacca gctaataaac	480
	ctgatcatat tgatatacaa aaaggagaca aatattcttt attaggatat ccttataatt	540
	attcagctta ctctttatat caaagtcaga ttgaaatggt caatgattct caatattttg	600
40	gatatactga ggtaggaaac tctggatcag	630
	<210> 116	
	<211> 330	
	<212> DNA	
45	<213> Staphylococcus aureus	
	<400> 116	
	agaaagaaag tgatttctat gattaaaaat aaaatattaa cagcaacttt agcagttggt	60
50	ttaatagccc ctttagccaa tccatttata gaaatttcta aagcagaaaa taagatagaa	120
	gatatcgggc aaggtgcaga aatcatcaaa agaacacaag acattactag caaacgatta	180
	gctataactc aaaacattca atttgatttt gtaaaagata aaaaatataa caaagatgcc	240
55	ctagttgtta agatgcaagg cttcatttagc tctagaacaa catattcaga cttaaaaaaa	300

EP 1 770 171 A1

	tatccatata ttaaaagaat gatatggcca	330
5	<p><210> 117 <211> 350 <212> DNA <213> Staphylococcus aureus</p>	
10	<p><400> 117 tcgttacacc gaatgggtcaa gtatctgcat atgatcaata cttatttgca caagacccaa 60 ctgggtccagc agcaagagac tatttcgtcc cagataatca actacctcct ttaattcaaa 120 gtggctttta tccatcattt attacaacat tgtcacacga aaaaggtaaa ggtgataaaa 180 gcgagtttga aatcaacttac ggcagaaaca tggatgctac atatgcatac gtgacaagac 240 ctcgtttagc cgttgataga aaacatgatg cttttaaaaa ccgaaacgtt acagttaaatt 300 atgaagtgaat ctggaaaaca catgaagtaa aaattaaaag catcacacct 350</p>	
20	<p><210> 118 <211> 221 <212> DNA <213> Staphylococcus aureus</p>	
25	<p><400> 118 tttaaagcgta ctatcacaca gacaagatgg cgctaaaaaa tctaaaatta cagtaactta 60 tcaacgtgaa atggatttat accaaattcg ttggaatggc ttctactggg caggcgcgaa 120 ttataaaaaac tttaaaacta gaacatttaa atcaacatat gaaattgatt gggaaaatca 180 caaagtgaat ttgttagata caaaagaaac tgaaaacaat a 221</p>	
35	<p><210> 119 <211> 337 <212> DNA <213> Staphylococcus aureus</p>	
40	<p><400> 119 ttgatagcga tttatttgta ggctacaaac ctcatagtaa agatcctaga gattatttcg 60 ttccagacag cgagttacca cctcttgtag aaagtggatt taacccttca tttatcgcaa 120 cagtatctca cgaaaaaggt tcaagcgaca cgagcgaatt tgaaatcact tatggaagaa 180 atatggatgt cactcatgcc attaaaagat caacacatta tggcaacagt tatttagatg 240 gtcataagat ccataatgca tttaaaaata gaaactacac tgtgaaatat gaagtcaatt 300 ggaagactca cgaaatcaaa gtgaaaggac agaattg 337</p>	
50	<p><210> 120 <211> 752 <212> DNA <213> Staphylococcus aureus</p>	
55	<p><400> 120 gtcagctcag taacaacaac actattgcta ggttccatat tgatgaatcc tgtcgctggg 60</p>	

EP 1 770 171 A1

	gccgcagatt ctgatattaa tattaaaacc ggtactacag atattggaag caatactaca	120
5	gtaaaaacag gtgatttagt cacttatgat aaagaaaatg gcatgcacaa aaaagtattt	180
	tatagtttta tcgatgataa aaatcacaaat aaaaaactgc tagttattag aacgaaaggt	240
	accattgctg gtcaatatag agtttatagc gaagaagggtg ctaacaaaag tgggttagcc	300
10	tggccttcag cctttaaggt acagttgcaa ctacctgata atgaagtagc tcaaatatct	360
	gattactatc caagaaattc gattgataca aaagagtata tgagtacttt aacttatgga	420
	ttcaacggta atgttactgg tgatgataca ggaaaaattg ggggccttat tgggtgcaaat	480
15	gtttcgattg gtcatacact gaaatatgtt caacctgatt tcaaaacaat tttagagagc	540
	ccaactgata aaaaagtagg ctggaaagtg atatttaaca atatggtgaa tcaaaattgg	600
	ggaccatatg atagagattc ttggaacccg gtatatggca atcaactttt catgaaaact	660
20	agaaatgggt ctatgaaagc agcagataac ttccttgatc ctaacaaagc aagttctcta	720
	ttatcttcag ggttttcacc agacttcgct ac	752
25	<210> 121 <211> 507 <212> DNA <213> Staphylococcus aureus	
30	<400> 121 tgttatogac cgttttgtat ccaaattggg ggcaatataa acgcgctgat ttaatcggac	60
	aatcttctta tattaaaaat aatgatgtcg taatattcaa tgaagcattt gataatggtg	120
	cttcagacaa attattaagt aatgtgaaaa aagaatatcc ttaccaaaca cctgtactcg	180
35	gtcgttctca atcaggtttg gacaaaactg aaggtagcta ctcatcaact gttgctgaag	240
	atggtggcgt agcgattgta agtaaatatc ctattaaaga gaaaatccag catgttttca	300
	aaagcggttg tggattcgat aatgatagca acaaaggctt tgtttatata aaaatagaga	360
40	aaaatggtaa gaacgttcac gttatcggta cacatacaca atctgaagat tcacgttgtg	420
	gtgctggaca tgatcgaaaa attagagctg aacaaatgaa agaaatcagt gaactttgta	480
	aaaagaaaaa tatccccaaa gatgaaa	507
45	<210> 122 <211> 213 <212> DNA <213> Staphylococcus aureus	
50	<400> 122 ggtgtcctat ctcgaaaaca aaacgctgca aaaaaatcaa aaattactgt tacttatcaa	60
	agtgaatgg atagatatac aaacttttgg atcaacttca actggatagg taataattat	120
55	aaagatcaca taagagcaac tcatacatca atttatgaag ttgattggga aaatcatata	180

EP 1 770 171 A1

	gttaaattaa tagataactca atctaaggaa aaa	213
5	<210> 123 <211> 220 <212> DNA <213> Staphylococcus aureus	
10	<400> 123 ataaagaaag gaaatgattt tatgggtcaaa aaaagactat tagctgcaac attgtcgtta	60
	ggaataatca ctctattgct tacttgcgtt catgaatcta aagctgataa caatattgag	120
	aatattggtg attgcgctga ggtagtcaaa agaacagaag atacaagttg cgataagtgg	180
15	ggggtcacac aaaatattca gtttgatttt gttaaagata	220
20	<210> 124 <211> 359 <212> DNA <213> Staphylococcus aureus	
25	<400> 124 atcattaggt aaaatgtctg gacatgatcc aaatttattt gttggatata aaccatatag	60
	tcaaaaatccg agagactatt ttgtgccaga caatgaatta cccccattag tacacagtgg	120
	tttcaatcct tcatttattg caactgtttc tcatgaaaaa ggctcaggag atacaagtga	180
	atttgaaata acgtatggca gaaatatgga tgttactcat gctactagaa gaacaacaca	240
30	ctatggcaat agttatttag aaggatctag aatacacaag gcatttgtaa acagaaatta	300
	cacagttaaa tatgaagtga actggaaaac tcatgaaatt aaagtgaag gacataatt	359
35	<210> 125 <211> 612 <212> DNA <213> Staphylococcus aureus	
40	<400> 125 aagttgctca aatacaagct ggtttacaat ataaaccaca agtacaacgt gtaccaggta	60
	agtggaacaga tgctaacttt aatgatgtta agcatgcaat ggatacgaag cgtttagctc	120
	aagatccagc attaaaatat caattcttac gcttagacca accacaaaat atttctattg	180
45	ataaaaattaa tcaattctta aaaggtaaag gtgtattaga aaaccaaggt gctgcattta	240
	acaaagctgc tcaaatgtat ggcattaatg aagtttatct tatctcacat gccctattag	300
	aaacaggtaa cggtagcttct caattagcga aagggtgcaga tgtagtgaac aacaaagttg	360
50	taactaactc aaacacgaaa taccataacg tatttggtat tgctgcatat gataacgatc	420
	ctttacgtga aggtattaaa tatgctaaac aagctgggtg ggacacagta tcaaaagcaa	480
	tcgttggtgg tgctaaattc atcggaact catatgtaaa agctgggtcaa aatacacttt	540
55	acaaaatgag atggaatcct gcacatccag gaacacacca atatgctaca gatgtagatt	600

EP 1 770 171 A1

	gggctaacat ca	612
5	<210> 126 <211> 401 <212> DNA <213> Staphylococcus aureus	
10	<400> 126 tgttattatt ctcatTTTTt tcaattacta atgaggtaag tgcattcaagt tcatttcgaca	60
	aaggaaaata taaaaagggc gatgacgcga gttatTTTTga accaacaggc cagtatttga	120
	tggtaaatgt gactggagtt gatggtaaag gaaatgaatt gctatcccct cattatgtcg	180
15	agtttcctat taaacctggg actacactta caaaagaaaa aattgaatac tatgtcgaat	240
	gggcattaga tgcgacagca tataaagagt ttagagtagt tgaattagat ccaagcgcaa	300
	agatcgaagt cacttattat gataagaata agaaaaaaga agaaacgaag tctttcccta	360
20	taacagaaaa aggttttggt gtcccagatt tatcagagca t	401
25	<210> 127 <211> 715 <212> DNA <213> Staphylococcus aureus	
30	<400> 127 ttttattcat tgcctaacg ttgacaacaa gtccacttgt aaatggtagc gagaaaagcg	60
	aagaaataaa tgaaaagat ttgcgaaaaa agtctgaatt gcagggaaca gctttaggca	120
	atcttaaaca aatctattat tacaatgaaa aagctaaaac tgaaaataaa gagagtcacg	180
	atcaattttt acagcactact atattgttta aaggcttttt tacagatcat tcgtggtata	240
35	acgatttatt agtagatttt gattcaaagg atattggtga taaatataaa gggaaaaaag	300
	tagacttgta tgggtgcttat tatggttatc aatgtgcggg tggtagacca aacaaaacag	360
	cttgtatgta tgggtggtgta acgttacatg ataataatcg attgaccgaa gagaaaaaag	420
40	tgccgatcaa tttatggcta gacggtaaac aaaatacagt acctttggaa acggttaaaa	480
	cgaataagaa aaatgtaact gtacaggagt tggatcttca agcaagacgt tatttacagg	540
	aaaaatataa tttatataac tctgatgttt ttgatgggaa gggttcagagg ggattaatcg	600
45	tgtttcatac ttctacagaa ccttcgggta attacgattt atttggtgct caaggacagt	660
	attcaaatac actattaaga atatatagag ataataaaac gattaactct gaaaa	715
50	<210> 128 <211> 233 <212> DNA <213> Staphylococcus aureus	
55	<400> 128 cgtagatgtg tttggagcta attattatta tcaatgttat ttttctaaaa aaacgaatga	60

EP 1 770 171 A1

	tattaattcg catcaaactg acaaacgaaa aacttgatg tatggtggtg taactgagca	120
	taatggaaac caattagata aatatagaag tattactggt cgggtatttg aagatggtaa	180
5	aaatttatta tcttttgacg tacaaactaa taagaaaaag gtgactgctc aag	233
	<210> 129	
	<211> 360	
10	<212> DNA	
	<213> Staphylococcus aureus	
	<400> 129	
	aatttttggc acatgattta atttataaca ttagtgataa aaaactgaaa aattatgaca	60
15	aagtgaaaac agagttatta aatgaagggt tagcaaagaa gtacaaagat gaagtaggtg	120
	atgtgtatgg atcaaattac tatgtaaact gctatttttc atccaaagat aatgtaggta	180
	aagttacagg tggcaaaact tgtatgtatg gaggaataac aaaacatgaa ggaaaccact	240
20	ttgataatgg gaacttacaa aatgtactta taagagttta tgaaaataaa agaaacacaa	300
	tttcttttga agtgcaaaact gataagaaaa gtgtaacagc tcaagaacta gacataaaaag	360
	<210> 130	
25	<211> 501	
	<212> DNA	
	<213> Staphylococcus aureus	
	<400> 130	
30	ccacctgttg aaggaagagg agttattaat tctagacagt ttttatctca tgatttaatt	60
	tttccaattg agtataagag ttataatgag gttaaaactg aattagaaaa tacagaatta	120
	gctaacaatt ataaagataa aaaagtagac atttttggcg ttccatattt ttatacatgt	180
35	ataataccta aatctgaacc ggatataaac caaaattttg gaggttggtg tatgtatggt	240
	ggtcttacat ttaatagtto agaaaatgaa agagataaat taattactgt acaggtaaca	300
	atcgacaata gacaatcact tggatttaca ataactacaa ataagaatat ggttactatt	360
40	caggaactag attacaaagc aagacactgg ctactaaag aaaaaaagct atacgagttt	420
	gatggttotg catttgaatc tggatatata aaatttactg aaaagaacaa tacaagtttt	480
	tggtttgact tatttoctaa a	501
45		
	<210> 131	
	<211> 542	
	<212> DNA	
	<213> Staphylococcus aureus	
50	<400> 131	
	gaagatttac acgataaaaag tgagttaaca gatttagctt tagctaattgc atatggtcaa	60
	tataatcacc cattcattaa agaaaatatt aagagtgatg aaataagtgg agaaaaagat	120
55	ttaatattta gaaatcaagg tgatagtggc aatgatttga gagtaaagtt tgcaactgct	180

EP 1 770 171 A1

	gatttagctc agaagtttaa aaataaaaat gtagatatat atggggcatc tttttattat	240
	aagtgtgaaa aaataagtga aaatatttct gaatgtctat atggaggtac aacactaaat	300
5	agtgaaaaat tggcacagga aagggtgatt ggtgctaata tttgggtaga tgggtattcaa	360
	aaagaaacag aattaatacg aacaaataag aaaaatgtga cattgcaaga attagatata	420
	aagatcagaa aaatattgtc cgataaatat aaaatttatt ataaagacag cgaaataagt	480
10	aaaggtctaa ttgaatttga tatgaaaact cctagagatt actcattcga catttatgat	540
	tt	542
15	<210> 132 <211> 343 <212> DNA <213> Staphylococcus aureus	
20	<400> 132 agtccttatct aacggcgatg taggtccagg aaatctaaga aatttttata ctaaatatga	60
	atatgtgaat ttaaagaatg ttaaagacaa aaattcacca gaatcacacc gcttagaata	120
	ctcgtataaa aatgatacat tgtatgctga atttgacaat gaatatataa ctagtgatct	180
25	aaagggaaaa aatgtcgatg tttttggtat aagctataaa tatggttcta actctcgtac	240
	tatatatggt ggtgttacta aagcagaaaa caataaatta gattcgccaa gaataatacc	300
	tataaattta attatcaatg gcaagcatca aacagttaca act	343
30		
	<210> 133 <211> 272 <212> DNA <213> Staphylococcus aureus	
35	<400> 133 ggatataaat acggaaataa agttacattt atagataatt ctcaacaaat tgatgttaca	60
	ttgacaggaa atgaaaaatt aactgttaaa gatgatgacg aagtttctaa tgttgacgtg	120
40	tttgtagtaa gagaaggtag tgacaaatca gctatcacia catcgattgg tggaattaca	180
	aagacaaatg ggactcaaca taaagatact gttcaaaacg ttaatttgtc agtttctaag	240
	agtacaggtc aacacactac ttctgtgact tc	272
45		
	<210> 134 <211> 450 <212> DNA <213> Staphylococcus aureus	
50	<400> 134 atgaaattta aagcgatagc aaaagcaagt ttagcattgg gaatgttagc aacaggtgta	60
	attacatcga atgtacaatc agtacaagcg aaaacagaag ttaaacaaca aagtgaatca	120
55	gagttgaaac actattataa taaaccggtt ttagagcgta aaaatgttac tggatataaa	180

EP 1 770 171 A1

	tatactgaaa aaggtaaaga ttatatagat gttatagtag acaatcaata ttctcaaatt	240
	tcttttagttg gatctgataa agacaaatth aaagatggag acaactcgaa tatagatgtg	300
5	ttttatcctta gagaagggtga cagtagacaa gcaacaaatt actcaattgg tggcgtaaca	360
	aaaacaaaca gtcaaccttt tattgactat atacacacac caatccttga aatcaagaaa	420
	ggtaaagaag aaccacaaag tagttttatac	450
10		
	<210> 135	
	<211> 500	
	<212> DNA	
	<213> Staphylococcus aureus	
15		
	<400> 135	
	gtattgaata taaaaatgtg acaggttata tcagtttcat tcaaccaagt attaaattta	60
	tgaatatcat agatggtaat tctgttaata accttgcttt aattggcaaa gataagcaac	120
20	attatcatatc ggggtgtacat cgtaatctta atatatthta cgttaatgag gataagagat	180
	ttgaagggtgc aaagtactct attgggggta tcaactagtgc aaacgataaa gctgtcgacc	240
	taatagcaga agcaagagtt attaaagcag atcatattgg tgaatatgat tatgacttht	300
25	tcccatthta aatagthtaaa gaagcgatgt cattgaaaga gattgattth aaattaagaa	360
	aataccttat tgataattat ggtctthtac gtgaaatgag tacagggaaa attaccgtca	420
	aaaagaaata ctatggaaag tatacattht aattggataa aaagttacaa gaagaccgta	480
30	tgtccgatgt tatcaatgtc	500
	<210> 136	
	<211> 384	
35	<212> DNA	
	<213> Staphylococcus aureus	
	<400> 136	
	gcgcaattac agtaacgacg caatcgggtca aagcagaaaa aatacaatca actaaagttg	60
40	acaaagtacc aacgctthaa gcagagcgat tagcaatgat aaacataaca gcaggtgcaa	120
	attcagcgac aacacaagca gctaacacaa gacaagaacg cagcgctaaa ctcgaaaagg	180
	caccaaatac taatgaggaa aaaacctcag cttocaaaat agaaaaata tcacaacct	240
45	aacaagaaga gcagaaatcg cttaatatat cagcaacgcc agcgctaaa caagaacaat	300
	cacaaacgac aaccgaatcc acaacgccga aaactaaagt gacaacacct ccatcaacaa	360
	acacgccaca accaatgcaa tcta	384
50		
	<210> 137	
	<211> 270	
	<212> DNA	
	<213> Staphylococcus aureus	
55		
	<400> 137	

EP 1 770 171 A1

	tttaaaagtt agttctttat tcgttgcaac tttgacaaca gcgacacttg tgagttctcc	60
	agcagcaaac gcgttatctt caaaggctat ggacaatcat ccacaacaaa cgcagtcaag	120
5	caaacagcaa acacctaaga ttcaaaaagg cggtaacctt aaaccattag aacaacgtga	180
	acacgcaa at gttatattac caaataacga tcgtcaccaa atcacagata caacgaatgg	240
	tcattatgca cccgtaactt atattcaagt	270
10	<210> 138 <211> 556 <212> DNA <213> Staphylococcus aureus	
15	<400> 138 tttttatcgt aagccctttg ttgcttgcca caatcgctac agattttacc cctgttccct	
	tatcatctaa tcaaataatc aaaactgcaa aagcatctac aaacgataat ataaaggatt	120
20	tgctagactg gtatagtagt gggctctgaca cttttacaaa tagtgaagtt ttagataatt	180
	ccttaggatc tatgcgtata aaaaacacag atggcagcat cagccttata atttttccga	240
	gtccttatta tagccctgct tttacaaaag gggaaaaagt tgaactaaac acaaaaagaa	300
25	ctaaaaaaag ccaacatact agcgaaggaa cttatatcca tttccaaata agtggcggtta	360
	caaatactga aaaattacct actccaatag aactaccttt aaaagttaag gttcatggta	420
	aagatagccc cttaaagtat tggccaaagt tcgataaaaa acaattagct atatcaactt	480
30	tagactttga aattcgtcac cagctaactc aaatacatgg attatatcgt tcaagcgata	540
	aaacgggtgg ttattg	556
35	<210> 139 <211> 532 <212> DNA <213> Staphylococcus aureus	
40	<400> 139 gaaagtattc tgtaggtact gcttcaattt tagtagggac aacattgatt tttgggttaa	
	gtggtcatga agctaaagcg gcagaacata cgaatggaga attaaatcaa tcaaaaaatg	120
	aaacgacagc cccaagtggag aataaaaacaa ctaaaaaagt tgatagtcgt caactaaaag	180
45	acaatacgca aactgcaact gcagatcagc ctaaagtggac aatgagtgat agtgcaacag	240
	ttaaagaaac tagtagtaac atgcaatcac cacaaaacgc tacagctaata caatctacta	300
	caaaaactag caatgtaaca acaaatgata aatcatcaac tacatatagt aatgaaactg	360
50	ataaaaagtaa tttaacacaa gcaaaaagatg tttcaactac acctaaaaca acgactatta	420
	aaccaagaac tttaaatacgc atggcagtgat atactgttgc agctccacaa caaggaacaa	480
55	atgttaatga taaagtacat ttttcaaata ttgacattgc gattgataaa gg	532

EP 1 770 171 A1

<210> 140
 <211> 622
 <212> DNA
 <213> Staphylococcus aureus

5

<400> 140
 cgggcaaata aataaagatg taacagatat aaaaatatat caagttccta aaggttatac 60
 attaaataaa ggatacgatg tgaataactaa agagcttaca gatgtaacaa atcaatactt 120
 10 gcagaaaatt acatatggcg acaacaatag cgctgttatt gattttggaa atgcagattc 180
 tgcttatggt gtaatgggtta atacaaaatt ccaatataca aatagcgaaa gcccaacact 240
 tgttcaaatg gctactttat cttcaacagg taataaatcc gtttctactg gcaatgcttt 300
 15 aggattttact aataaccaa gtggcggagc tgggtcaagaa gtatataaaa ttggtaacta 360
 cgatgggaa gatactaata aaaacgggtgt tcaagaatta ggagaaaaag gcgttggtcaa 420
 tgtaactgta actgtatttg ataataatac aaatacaaaa gtaggagaag cagttactaa 480
 20 agaagatggg tcatacttga ttccaaactt acctaattga gattaccgtg tagaattttc 540
 aaacttacca aaagggttatg aagtaacccc ttcaaaacaa ggtaataacg aagaattaga 600
 25 ttcaaacggc ttatcttcag tt 622

<210> 141
 <211> 892
 <212> DNA
 <213> Staphylococcus aureus

30

<400> 141
 aaagttggcg atggtaaaga taatgtggca gcagcgcgatg acggtaaaga tattgaatat 60
 gatacagagt ttacaattga caataaagtc aaaaaaggcg atacaatgac gattaattat 120
 35 gataagaatg taattccttc ggatttaaca gataaaaatg atcctatcga tattactgat 180
 ccatcaggag aggtcattgc taaaggaaca tttgataaag caactaagca aatcacatat 240
 acattttacag actatgtaga taaatatgaa gatataaaat cacgcttaac tctatattcg 300
 40 tatattgata aaaaaacagt tccaaatgag acaagtttga atttaacatt tgctacagca 360
 ggtaaagaaa caagccaaaa tgtcactggt gattatcaag atccaatggt ccatggtgat 420
 45 tcaaacattc aatctatctt tacaaaatta gatgaagata agcaaaactat tgaacaacaa 480
 atttatgtta acccattgaa aaaatcagca accaactacta aagttgatat agctggtagt 540
 caagtagatg attatggaaa tattaactta ggaaatggta gcaccattat tgaccaaact 600
 50 acagaaataa aggtttataa agttaactct gatcaacaat tgctcaaag taatagaatc 660
 tatgatttta gtcaatacga agatgtaaca agtcaatttg ataataaaaa atcathtagt 720
 aataatgtag caacattgga ttttggtgat attaattcag cctatattat caaagttggt 780
 55 agtaaataa cacctacatc agatggcgaa ctagatattg cccaaggtag tagtatgaga 840

EP 1 770 171 A1

acaactgata aatatgggta ttataattat gcaggatatt caaacttcac cg 892

<210> 142
 <211> 747
 <212> DNA
 <213> Escherichia coli

<400> 142
 5 gtttgggact tattgctctg gcggtgggta atgcatatgc aacacaattg ttggatgatt 60
 atagtataat ttcttatatg actgatgaag aatogccgat tgaaatcaaa gataataatc 120
 cgataagtaa tggagagtat ctaaccactg aagacgaaag ccatgctgtg aaagtggatg 180
 15 acggtgtaac tggatatata aataatgccg gtgtgatgac tagtgggtgat ggatcttatg 240
 gtattttctgt tgatagtcaa aacaaagtat tatatataag cgatagcgat attaagacct 300
 ctggaagcgt atctgacaaa gaaaatggag ggataacagc cagcgcagta gtcagtgaat 360
 20 ttggtggcac catctttatg aatgggtgata attcagtcga gtcgggtggg gcatattcag 420
 cgggactttt aagccagggt aatgattctg aaaagatggg aaataacacc cgtcttgaaa 480
 ccacagataa aacgaacatt gttacctctg gggaaaatgc agtaggtgtt cttgcatgtt 540
 25 caagtctcgg agagtctcga acatgtgtcg atgctgtaga tgatgaagtt agtgattcta 600
 acagttacga agttattagc cgtgctgatt taaaaatgaa tgggtgggtcc ataacaacta 660
 atggcattaa tagctatggg gcttatgcta atgggaaaaa agcatatatt aatttagatt 720
 30 atgtggcact tgaaactgtg gctgatg 747

<210> 143
 <211> 621
 <212> DNA
 <213> Escherichia coli

<400> 143
 35 agcctgggta cgacttatct ggtgggtgctg aacttcgcga ttttgccgag cctccagcag 60
 40 ttttaataaag tcctcgcgta cgaagtgcgt atgttgatga ccgacaaact gcaactggag 120
 gacggcaagc agttgggtgt gcctcccgct ttccgtcggg agatctaccg tgagctgggg 180
 atctctctct actccaacga ggctgccgaa gaggcaggtc tgcggtgggc gcaacactat 240
 45 gaattcttaa gccatcagat ggcgcagcaa ctgggcgggc cgacggaagt gcgcgttgag 300
 gtcaacaaaa gttcgctgtg cgtctggctg aaaacctggc tgcgcgcca tatctgggta 360
 cgctgcgcgc tgaccgaaat tcatcagggc gatctctctc cgtgttccg ctatacgtg 420
 50 gcgattatgc tattggcgat aggcggggcg tggctgttta ttctgtatcca gaaccgaccg 480
 ttggtcgatc tcgaacacgc agccttgacg gttggtaaaag ggattattcc gccgcccgtg 540
 cgtgagtatg gcgcttcgga ggtgcgttcc gttaccctg cctttaacca tatggcggct 600
 55 ggtgttaagc aactggcgga t 621

EP 1 770 171 A1

5 <210> 144
 <211> 449
 <212> DNA
 <213> Escherichia coli

10 <400> 144
 accacgacag gtctttatga tctgaaaacc gaaaatacct tgttaactac cgatgctgca 60
 ttcgataaat tagggaatgg cgataaagtc accgttggcg gcgtagatta tacttacaac 120
 gctaaatctg gtgattttac taccacccaaa tctaactgctg gtaagggtgt agacgccgcg 180
 gcgcaggcta ctgattcagc taaaaaacgt gatgcgttag ctgccaccct tcatgctgat 240
 15 gtgggtaaat ctgttaatgg ttcttacacc aaaaagatg gtactgtttc tttcgaaacg 300
 gattcagcag gtaatatcac catcggtgga agccaggcat acgtagacga tgcaggcaac 360
 ttgacgaacta acaacgctgg tagcgcagct aaagctgata tgaaagcgct gcttaaagcc 420
 20 gcgagcgaag gtagtgacgg tgcctctct 449

25 <210> 145
 <211> 704
 <212> DNA
 <213> Escherichia coli

30 <400> 145
 atggaattgc gtctgttcaa ctatctggtc gagecgtaaag atctgattca gatcccggtg 60
 tatccgttcg aacgcgaatg gacgcacttc accagcatga ottacattga tgagttttca 120
 gagctgcatg gcaaagatgt tccggtgcgt gaagccctcg ccggacaagt gccagcgcga 180
 ggcgtcggca cctgtttcag ccgcgcgcc gtgaccgcac tgtagctga cggtgacggt 240
 35 attgctttcg acgtgcagag tcttactgaa gattacgaca ttggcttccg cctgaaagaa 300
 aaaggatatga cggaaatttt tgtccgtttt ccggtggtgg acgaagccaa agaacgcgag 360
 cagcgtaaat ttttacagca cgcgcggaca tcaaactga tctgcgtgcg cgaatatttc 420
 40 cccgatacct ttccgactgc ggttcgacaa aaatcccgt ggatcatcgg cattgttttc 480
 caaggcttta aaaccataa atggacctcc agcctgacgc tgaactactt tctctggcgc 540
 45 gaccgcaaag gggcaatcag taactttgtc agcttccctc cgatgctggt gatgatccag 600
 cttttgctgt tgctggcgta tgaaagtttg tggcccgatg cctggcattt cctttctatt 660
 ttcagcggca gcgcatggtt aatgacctg ctgtggctaa actt 704

50 <210> 146
 <211> 251
 <212> DNA
 <213> Escherichia coli

55 <400> 146
 ataatcctcg tcatttgcag attatggaac tcgagggggc gcagctcccg cgcgtactgg 60

EP 1 770 171 A1

	atgatcccaa agttgatgta gcgattatca gcaccactta cattcagcag accgggcttt	120
5	ctccggtgca cgacagcgta tttattgaag ataagaattc gccgtatgtg aatattttgg	180
	tggcacggga agataataag aatgcagaaa acgtgaagga atttctgcaa tcttatcaat	240
	cacccgaagt c	251
10	<210> 147 <211> 423 <212> DNA <213> Escherichia coli	
15	<400> 147 ctctgtccct cagttctacg acggctctgg ccgctgccac gacggttaat ggtgggaccg	60
	ttcactttta aggggaagtt gtaacgccg cttgcgcagt tgatgcaggc tctgttgatc	120
20	aaaccgttca gttaggacag gttagtaccg catcgctggc acaggaagga gcaaccagtt	180
	ctgctgtcgg ttttaacatt cagctgaatg attgcgatac caatgttgca tctaaagccg	240
	ctgttgccct ttaggtacg gcgattgatg cgggtcatac caacgttctg gctctgcaga	300
25	gttcagctgc gggtagcgca acaaacgttg gtgtgcagat cctggacaga acgggtgctg	360
	cgctgaagct ggatggtgcg acatttagtt cagaaacaac cctgaataac ggaaccaata	420
	cca	423
30	<210> 148 <211> 768 <212> DNA <213> Escherichia coli	
35	<400> 148 gactcggtag agcgattgag gcaactggcg caacaaaccg gctcgctgaa gtcacatcaacc	60
	gaacagaaaag ttattaccac aacgaagaaa gctgtaccgg taaaacagac agtcacggca	120
40	cccgtcatac catccaatac agttttaact gccaaacccg tcattacaga gccggcaaca	180
	accgtcattt ccattgagcc cgccaatcct gatgtggtct atattcccaa ctacaacca	240
	accgtggttt acgggaactg ggccaatact gcgtatccgc cggtttatct gccaccacca	300
45	gccggagAAC cgtttgttga cagctttgta cgcggattcg gctatagcat gggcggttgc	360
	accacgtacg cactattcag cagcatcgac tgggacgacg acgatcatga ccatcatcat	420
	catgacaatg atgattatca tcaccacgat ggcggtcatc gtgacggtaa tggctggcaa	480
50	cacaacggcg acaacatcaa tatcgacgtc aacaatttca accgtatcac cggtagcat	540
	cttactgata agaatatggc atggcgccac aatccaaact accgtaatgg tgtgccctat	600
	catgatcagg atatggcaaa gcggtttcat caaacgatg tcaacggcgg aatgagcgcc	660
55	acgcaattac ctgccccaac gcgcgacagc cagcgtcagg cggcagcaaa tcagtttcag	720

EP 1 770 171 A1

	caacgaacac acgccgcacc agtcattaca cgagataccc aacgtcag	768
5	<210> 149 <211> 788 <212> DNA <213> Escherichia coli	
10	<400> 149 cttttacgacg gttctcccca ggactgaaag cccagtttgc cttcggcatg gtctttttgt	60
	tcgttcagcc cgatgccagc gctgctgaca taagtgcgca gcaaataagg ggggtgatta	120
	ttccgcaggc cttcagtcag gcgcttcagg acggcatgag cgtcccgtc tatattcatc	180
15	tcgccggtag ccagggtcgc caggacgac agcgaatcgg cagcgctttt atctggctgg	240
	acgatggaca gctacgcac cgaaaaatac agctggaaga gagtgaagat aacgccagt	300
	tcagcgaaca aactcgacag cagctgatgg ctctggccaa cgccccgttc aatgaggccc	360
20	ttaccatccc cctgactgac aacgcgcagc tggatctcag cttgcgccaa ctgctgctgc	420
	agctagtggc caagcgcgaa gcgctgggca ccgtactacg ctcacgtagc gaagacatcg	480
	ggcagtcacg tgtaaacacc ctcagcagta atctgagcta taacttgggc gtctataaca	540
25	accagttgcg taacggcggg agcaacacat ccagctatct gtcgctgaat aacgttactg	600
	cactgcgcga acatcatgtg gtgctcgacg gctcgtgta cgggacggc agcggcgaac	660
	aggacagtga attatataaa gcgatgtatg aacgcgattt tgccggtcac cgatttgccg	720
30	gtggaatgct cgacacctg aacttgcagt ccttagggcc gatgaccgcc atttcagcag	780
	ggaagatt	788
35	<210> 150 <211> 750 <212> DNA <213> Escherichia coli	
40	<400> 150 ttgaaacttc ttactgccgc atttttagca gcgagtcgcc cggcgaagag tgctgttaat	60
	aacgcctatg atgcattgat tattgaagct cgcaagggtg atactcagcc agctttgtca	120
	tggtttgcac taaaatcagc actcagcaat aaccaaattg ctgactggtt acagattgcc	180
45	ttatgggccg ggcaagataa acaggttatt accgtttaca accgctaccg tcatcagcaa	240
	ttaccagcgc tggtttatgc agctgtcgcc gtcgcttacc gtaacctgca acaatggcaa	300
	aactcgctta cactgtggca aaaggcgctc tctctggagc cgcaaaataa ggattatcaa	360
50	cggggacaaa ttttaaccct ggcagatgct ggctactatg atactgcgct gggttaaactt	420
	aagcagctta actctggagc accggacaaa gccaatctac tcgcagaagc ctatatctat	480
	aaactggcgg ggcgtcatca ggatgaatta cgggcgatga cagagtcatt acctgaaaat	540
55	gcattctacg aacaatatcc cacagaatac gtgcaggcat tacgtaataa tcaacttgct	600

EP 1 770 171 A1

	gccgcgattg acgatgccaa tttaacgcc a gatattcgcg ctgatattca tgccgaactg	660
5	gtcagactgt cgtttatgcc tacgcgcagt gaaagtgaac gttatgccat tgccgatcgc	720
	gccctcgccc aatacgcctgc attagaaatt	750
10	<210> 151 <211> 733 <212> DNA <213> Escherichia coli	
15	<400> 151 atagcagggc tgtttgtatc atctctaagt tatgcagaaa acacggagat cccttcttat	60
	gaagaaggga tctcgcctctt tgatgttgaa gccactctgc aaccagatgg ggtgctcgac	120
	atcaaagaaa atattcattt tcaggcgcg aatcagcaga ttaagcacgg cttttatcgt	180
20	gatttaccac gactatggat gcagcctgat ggggacgctg cactgctgaa ctatcatatt	240
	gttggcgta cccgtgatgg tattcctgaa ccctggcatc ttgactggca tatcgggtta	300
	atgagtattg tcgtgggcca taaacaacgt ttcttgccctc aaggcgacta tcattatcaa	360
25	attcattatc aggttaaaaa tgctttcctg cgtgaggggg attctgatct gctaactctg	420
	aacgtgaccg gtaaccactg gccgtttgaa atttataaga ccggtttttc tctccagttc	480
	tctaataattg cgggtaatcc atttagcgaa atcgatcttt ttaccggaga agagggcgac	540
30	acatatcgta atggcgcgat ccttgaggac ggaagaattg aatcccgcga tccgttttat	600
	cgtgaagatt tcacggctct ctaccgctgg cctcacgctt tacttagcaa tgccctcggt	660
	ccgcaaacga cgaatatattt cagccatctt cttttaccct ccacgtcatc gttgttaatt	720
35	tggtttccgt gtc	733
40	<210> 152 <211> 756 <212> DNA <213> Escherichia coli	
45	<400> 152 tattgtcatc gcgcagagtc tcacgatgcg ggcgatatca gctttagcga tatctttcgt	60
	ggccccgctt ccatcttttg cggcattgag tatcaaacgc cgtggaatcc cctgcgtctg	120
	aaactcgaat acgatggaaa caattaccag aatgatttcg ctggcaaact gcctcaggca	180
	agccatttca acgtcggcgc agtttatcgc gctgccagct gggcagatct caacctgagt	240
50	tatgaacgcg gtaacacgtt gatgtttggc ttcacgttac ggaccaattt caacgatctg	300
	cgcctgccc tcgcgcgatac gccaaaaccg gcataatcaac ctgcgcctga atctgaagga	360
	ttgcagtaca ccacggtagc aaaccaactt accgccctga agtataacgc gggctttgac	420
55	gcgccagaaa ttcagctacg cgataagaca ctgtatatgt ctggtcagca atacaaatac	480

EP 1 770 171 A1

	cgtgactctc gtgaagcggc cgatcgtgcc aaccggattc tggatgaataa cctgccgcaa	540
	ggcgttgaga agattagcgt gacgcaaaag cgcgagcata tggcgatggc gactaccgaa	600
5	accgacgtag ccagcctgcg caaacagctg gcaggtacag cgcttggc atcagagcca	660
	ctgcaacaac aacgtgttga agctgaagat ctttctgcct ttggtcgggg ctaccgtatt	720
	cgtgaagatc gcttttagcta ctctttcaac ccaaca	756
10		
	<210> 153	
	<211> 735	
	<212> DNA	
	<213> Escherichia coli	
15		
	<400> 153	
	gaataccaaa gcagatcgtc tcgctgaatt aaaaatccgt tcgccctcaa ttcaactgat	60
	aaaatttggc gctattgggt tgaatgcaat tatcttttcc cccctgctga tagctgctga	120
20	tacaggaagt caatatggca ccaatattac tattaatgat ggtgacagaa ttacaggaga	180
	taccgccgat ccatcaggaa acctctatgg tgtaatgacc ccagcaggaa acacgcctgg	240
	caatatcaac ctgggtaatg atgtcacctg caatgtcaac gacgcctctg gatatgcaaa	300
25	aggaatcatt attcagggca aaaacagctc cctgacagct aaccgactca cagtagatgt	360
	tgttggctaa acctctgcca tcggcattaa ctttaattggg gactataccc atgctgactt	420
	aggcacaggc agcaccatta agagtaacga tgacggcatc attattgggc atagctcaac	480
30	actaacagcc actcaattca ccattgaaaa ctogaacggc ataggcctaa ccatcaatga	540
	ctatggcacc agtgtcgatc ttggaagcgg aagtaaaatc acgaccgatg gaagtacagg	600
	tgtttatatc ggtgggtctca acggcaataa cgccaatggc gctgcgcggt ttacggctac	660
35	agacctgaca atcgatgttc agggctacag cgccatgggg ataaacgtac agaaaaactc	720
	tggtgtcgat ctggg	735
40		
	<210> 154	
	<211> 509	
	<212> DNA	
	<213> Escherichia coli	
45		
	<400> 154	
	ctaactcatt gtggtggagc ccaaactga ttactcatgg tttttatgcc cggaccggc	60
	acaagcataa gctaaaaaaa acatttatta tgcttagtgc tggtttagga ttgttttttt	120
	atgttaatca gaattcattt gcaaatgggtg aaaattattt taaattgggt tcggattcaa	180
50	aactgttaac tcataatagc tatcagaatc gcctttttta tacgttgaaa acaggtgaaa	240
	ctgttgccga tctttctaaa tcgcaagata ttaatttatc gacgatttgg tcgttgaata	300
	agcatttata cagttctgaa agcgaaatga tgaaggccga gcctgggtcag cagatcattt	360
55	tgccactcaa aaaacttccc tttgaataca gtgccttacc acttttaggt tcggcacctc	420

EP 1 770 171 A1

ttgtttgctgc aggtgggtgtc gctgggtcata caaataaaact gactaaaatg tccccggacg 480
 5 tgaccaaaaag caacatgacc gatgacaag 509

 <210> 155
 <211> 338
 <212> DNA
 10 <213> Escherichia coli

 <400> 155
 ggcgttacta tctctctat gtgcacacgg agctctcag tctattacag aactatgttc 60
 ggaatatcac aacacacaaa tatatacgat aaatgacaag atactatcat atacggaatc 120
 15 gatggcaggc aaaagagaaa tggttatcat tacatttaag agcggcgcaa catttcaggt 180
 cgaagtcccg ggcagtcaac atatagactc ccaaaaaaaaa gccattgaaa ggatgaagga 240
 cacattaaga atcacatatc tgaccgagac caaaattgat aaattatgtg tatggaataa 300
 20 taaaaccccc aattcaattg cggcaatcag tatggaaa 338

 <210> 156
 <211> 500
 25 <212> DNA
 <213> Escherichia coli

 <400> 156
 tttgttgtaa ttggtacttc attcctgaaa atttctattg tactggggat attgaagaac 60
 30 gcattaggca ttcaacaggt accaccaaac atggcgctaa catcagtgtc tttgatactg 120
 acaatgttta ttatgtctcc gataatatta cagataaatg ataatatctc tcaggaacca 180
 atcaattata ccgactctga tttttttcaa aaagttgatg agaaaatatt atcaccatat 240
 35 cgcggtatct tagaaaaaaaa tacagagaaa gacaatgtag agttttttga acgtgcagct 300
 caaaaaaaaaat tgggtaatga aactatctta aaaaaagact ctctatttat actgttaccg 360
 gctttcacga tggggcagct tgaagctgca ttcaagatag gttttttgct ctatttacc 420
 40 tttattgca tagatttgat catttccaat atcttattgg ccttgggtat gatgatgta 480
 tcgccagtaa caatttcgat 500

 45 <210> 157
 <211> 503
 <212> DNA
 <213> Escherichia coli

 <400> 157
 50 ttacgcttcc gatcatagta gagaactata cattttcggg aaaaattgcc tctggaatct 60
 ttacgttgac aggaatagtg ctaaaagaaa taagtattgg ttttttcatt gggttatcat 120
 ttactattct tttttgggca atagatgagg ctgggcagat tattgatact ctaagagggt 180
 55 caacaatatc ttcaattttt aaccgcgtcc taagtgatcc atcttctatc actggcggtta 240

EP 1 770 171 A1

	ttttgtacca atttatctct gtgatctttg ttattcatgg tgggatacaa agcattcttg	300
5	ataagctata tttatcctac gagatattac cattacaagc cgatattgca ttcaatcgtg	360
	ctttaataga ttttttggtt tctctatggg attcatttat taaactgatg ttatcatttt	420
	cagttcccat gattatcggg atattcttat gtgatatggg gtttggggtt ottaacaaaa	480
10	cagcgctca actaaacgta ttc	503
	<210> 158	
	<211> 617	
	<212> DNA	
15	<213> Escherichia coli	
	<400> 158	
	aagtgaagag gtaatggctg cagtgcagtc attaatctta ttttcatttt tttctttata	60
20	tggcatgagt ttttttggtg ataatgttg gttagttaat acgacaatag actcgctaaa	120
	tagaccgttt ttgtatgcca ttcgagaaat attaggtgcg gtgttaaata tttttttatt	180
	atataattttg ccaatttctt tgattgtctt tgttggaact gttacgactg gtgtatcaca	240
25	aataggattc atctttgcgg ttgaaaaaat aaaccatcg gctcagaaga ttagtgtaaa	300
	aaataacctg aaaaatattt tttctgtaaa gagcattttt gagctactta aatcagtatt	360
	taagttagtg ataattgttc tcatTTTTTT ttttatgggg cattcatatg caaatgagtt	420
30	tgctaatttc acaggactga acgcatatca agctcttgtc gttgttgctt tttttgtttt	480
	tcttttatgg aaaggcgtgc tattcggata tctactcttt tcagtatttg atttctggtt	540
	ccagaagcat gagggactga agaaaatgaa aatgagtaaa gatgagggtg aacgagaagc	600
35	caaggatact gatggta	617
	<210> 159	
	<211> 740	
	<212> DNA	
40	<213> Escherichia coli	
	<400> 159	
	gatggtgact ctattgcagg attaccaaca aaaacaattg gcgcaaagct atcagattca	60
45	gcaggccgtt tttgagagcc agaataaagc tattgaggaa aaaaaagccg cggcaaccgc	120
	tgctttgggt ggcgggatta tttcatcagc attggggatc ttaggttctt ttgcagcaat	180
	gaacaacgcg gctaaagggg ctggtgagat tgctgaaaaa gcaagctctg catcttcaaa	240
50	ggctgctggt gcggttctg aggttgcaaa taaagctctg gtcaaggcta cggaaagtgt	300
	tgctgatgtc gcagaggagg catccagtgc gatgcagaaa gcgatggcca caacaacgaa	360
	agcagccagc cgtgcatctg gcgttgcaaa tgatgttgcg aaagccactg actttgctga	420
55	agatcttgca gacgcgcgcg agaagacaag cagaatcaat aagttgttga attccgtaga	480

EP 1 770 171 A1

	taaactgacc aataccacag catttggtgc cgtgaccagt cttgctgaag gtacgaaaac	540
	gttgccaaca acaatatctg agtccgtcaa atcgactcat gaggttaatg aacaacgtgc	600
5	gaagtcgctg gaaaacttcc agcaggggaa tctggagctg tataaacaag acgttcgcag	660
	aacgcaggat gatatacga ctcgctctgcg tgatataacg tccgctgtcc gcgatctcct	720
	tgaggtccag aatcgtatgg	740
10		
	<210> 160	
	<211> 717	
	<212> DNA	
	<213> Escherichia coli	
15		
	<400> 160	
	tgtttgaggt cactttcttg tggcgtgac cccaagggtc tgaagaatac tcgacgataa	60
	agcgcgtatg ggtctacatc actggtgtga ccgatcacca tcagaacagc cagccccagt	120
20	cgatgcagcg aattgcaggc actaacgtct gccagtggaac gacacaactc aatgccaaact	180
	ggcgcggcag ctactgcttt attcccaccg aacgcgatga ctttttttct gtaccatccc	240
	ccgatcgct cgaattgcgc gaaggtggc gaaaactatt accccaggcg atagccgac	300
25	cgctgaacct acaaagctgg aaaggcgggc gagggcacgc tgtttctgca ctcgaaatgc	360
	cgcaagcgcc tctgcaaccg ggatgggatt gtccgcaagc gccagaaata cctgccaaaag	420
	aaattatctg gaaaagtga cggttgaaaa agtcacggcg tgtatggatt tttaccaccg	480
30	gcgatgcaac agcagaagaa cgcgcgctgg cagttttgct cgatggcgaa ttttgggcgc	540
	aaagtatgcc cgtctggcca gtgctgactt cgctgaccca tcgtcagcaa cttcctcccg	600
	ccgtgtatgt gttgatcgac gctatcgaca ccacgcaccg cgcacagaa ctgccgtgta	660
35	atgcggattt ctggctcgca gtacagcaag agttattacc cctggtgaaa gctattg	717
	<210> 161	
	<211> 379	
40	<212> DNA	
	<213> Escherichia coli	
	<400> 161	
	tgtttctgca ctcgaaatgc cgcaagcgcc tctgcaaccg ggatgggatt gtccgcaagc	60
45	gccagaaata cctgccaaaag aaattatctg gaaaagtga cggttgaaaa agtcacggcg	120
	tgtatggatt tttaccaccg gcgatgcaac agcagaagaa cgcgcgctgg cagttttgct	180
	cgatggcgaa ttttgggcgc aaagtatgcc cgtctggcca gtgctgactt cgctgaccca	240
50	tcgtcagcaa cttcctcccg ccgtgtatgt gttgatcgac gctatcgaca ccacgcaccg	300
	cgcacagaa ctgccgtgta atgcggattt ctggctcgca gtacagcaag agttattacc	360
	cctggtgaaa gctattgcc	379
55		

EP 1 770 171 A1

<210> 162
 <211> 402
 <212> DNA
 <213> Escherichia coli

5

<400> 162
 tatgctgctc caactattcc tcaggggcag ggtaaagtaa cttttaacgg aactgttggt 60
 actgctccat gcggcatttc tcagaaatca gctgatcagt ctattgattt tgggcagctt 120
 10 tcaaaaagct tccttgccgc aggagggtgta tccaaaccaa tgaatttaga tattgaattg 180
 gttaattgtg atatcacttc atttaagggg gggggaggaa gccaggcagc aaaaaaaggg 240
 actgtgaagc tggcttttag tgggtccaagg gtttctggtc ataatgagga gttagatacc 300
 15 agcgggggga caggctactgc aattgcagtt caggccgcag gtaaaaacgt ttctttcgat 360
 ggcacagaag gtgatgctaa taccctgaaa gatggagata at 402

20

<210> 163
 <211> 724
 <212> DNA
 <213> Escherichia coli

25

<400> 163
 cttggaaatg ttggtaaagc tgtttcgcaa tatattctgg ctcagagaat ggcacagggg 60
 ttatcgacaa cagctgcaag tgcgggtctg atcacatcgg ctgttatgct ggctatcagt 120
 cctctttctt tcctggctgc tgcagataaa tttgagcgag ctaagcagct tgaatcatat 180
 30 tctgaacgat ttaaaaaatt gaattatgaa ggggatgctt tactcgagc ctttcataaa 240
 gaaacccggag ctatagatgc agccctgaca acaataaata ctgtcctgag ttctgtatct 300
 gcgggagtta gtgcagcctc cagtgcaccc ctcataaggg ccccgataag catgctggtg 360
 35 agtgcattaa ccggtacgat atctggcatt ctggaagcat caaacaggc tatgtttgag 420
 cacgttgagc agaaattcgc tgctcggatc aatgaatggg aaaaggagca tggcaaaaat 480
 tattttgaga atggatatga cgcaagacat gctgcgtttt tagaagactc tctgtctttg 540
 40 cttgctgatt tttctcgtca gcatgcagta gaaagagcag tcgcaataac ccagcaacat 600
 tgggatgaga agatcgggtga acttgcaggc ataaccgta atgctgatcg cagtcagagt 660
 45 ggtaaggcat atattaatta tctggaaaat ggagggcttt tagaggctca accgaaggag 720
 tttta 724

50

<210> 164
 <211> 618
 <212> DNA
 <213> Escherichia coli

55

<400> 164
 tcaatgctga aactataagg catcagtata ataccacac acaagatttt ggggtgactg 60
 aatgggttact ggcagcgaat tctattggct taaaagcaaa atatgtagaa aaacattttt 120

EP 1 770 171 A1

	ccagattgtc aataatttct ttacctgctg tgatatggcg ggatgacggg aagcattata	180
5	tattgtctcg tattactaaa gattcatcac gctatcttgt ttatgatcca gaacaacatc	240
	agtcactaac ttttagtcgg gatgagtttg aaaaactgta tcagggaaaa gtcattctgg	300
	ttacgtcaag agcaacagta gtcggagagt tagctaaatt tgatttttct tggtttatcc	360
10	cctctgttgt gaaatacagg aggattttac ttgagggtgt aactgtttct gcttttattc	420
	agtttcttgc gttaataaca cctctttttt ttcagggtgt aatggataag gttttagttc	480
	accgggggtt ttcaacgtta aatattatca caatagcatt tattatagtg atactttttg	540
15	aagtgatatt aaccggagcc agaacttata ttttctctca tactacaagt cgtattgacg	600
	tcgaactggg tgctaagt	618
20	<210> 165 <211> 768 <212> DNA <213> Escherichia coli	
25	<400> 165 catcaggcag ttatcctgtc gactttacca ctctctcccg gcttattatt gataagctcc	60
	ggcatcaact ttttctgccg gttccctctc gcgaaacttt ccaccaacgc gtgctggaaa	120
	gctacgcccc tacgcaacag acaattgatg cccgccatga ctggggccatc ctgctgaaa	180
30	aagcgttgaa ttttgccgag gctgagcagg cactgctgac aggacacgct ttccaccctg	240
	cacctaagtc tcatgaaccg tttaaccgcc aggaagctga acgatacctg cctgacatgg	300
	cacctcactt cccgctgctg tgggttttcg tggataaaaac gcaaactcgt ggtgaaagtc	360
35	tgcatcttaa ccttcaacag cggttgacgc gatttgccgc agaaaatgcg cccagttac	420
	tcaacgaatt aagtgacaat caatggctgt tcccgctgcg ccggtggcag ggagaatata	480
	ttttccagca agtggtgtgc caggcacttt ttgctaaagg acttatcaga gacttaggcg	540
40	aggccggcac gtcgtggctg ccgaccacct ctcccgctc cctctactgt gctaccagcc	600
	gcgatatgat caagttctcc ctgagcgttc ggctgaccaa ctccgtccgt actctgtctg	660
	tgaaagaggt ggagcgagga atgcgcctgg cacgtctggc gcaaaccgac ggctggcaga	720
45	tgctacaggc ccgcttcctt actttccggg taatgcagga ggacgact	768
50	<210> 166 <211> 501 <212> DNA <213> Escherichia coli	
55	<400> 166 ttcacagcgg atatggactg cgctgtgaaa aactcgacaa gcctctgaat cttggctggg	60
	ggctggacaa tagcgcggtg ttgcactggc ccggggagct gccaacaggg tggctgtgcg	120

EP 1 770 171 A1

	acgcgctgga tcagatatatt atcgccgcac cacaactttc agcagtgggt cttccctggt	180
	ccgaatggtg tgaggagcca caggcgctga cgcttttcgg acagggtacaa agcgacatta	240
5	tcacatggtt cgctttctgg cagttaccgt tatggctgag ttctccggca aaccggggcct	300
	ccggtgaaat ggtttttgat gcagagcgtg agatttatatt cccgcagcgc cccccccgtc	360
	cgcagggtga agtttatcgt cgttacgac caccgattcg caggatgctg agtttccgca	420
10	ttgccgatcc cgttttctgat gcagaacggt tcaactcgctg gatgaacgat ccgcgcggtg	480
	agtattttctg ggagcaaagt g	501
15	<210> 167 <211> 721 <212> DNA <213> Escherichia coli	
20	<400> 167 agactgggat ttggtcaacc gccgcctggt ggcaaaaatg ttgtctgagc tggagtatga	60
	gcaggttttc caccgcggaat ctccgggcca tgaccgctac tgcattaacc tgccgggagc	120
	acaatggcgc ttcatcgctg aacgtgggtat ctggggctgg ctctggattg atgctcaaac	180
25	tctgcgctgc gcggaacgagc cagtactggc tcagacgctg ctgatgcagc taaagcaggt	240
	actgtcaatg agcgatgcaa ccgttgctga gcatatgcag gatttgtatg ccacgctgct	300
	gggcgacctg caactactga aagcccgtcg cgggctgagc gccagtgacc tgattaatct	360
30	taatgccgac cgctgcaat gcctgctgag cggtcaccc aaattcggtt ttaataaagg	420
	tcgccgtggc tggggtaaag aggcgctgga acgatatgcg ccagagtatg ccaacacctt	480
	cagactgcac tggctggcgg taaaacgtga acatatgac tggcgctgtg ataacgagat	540
35	ggatattcat cagttgttga cggccgcaat ggatccgcag gagtttgccc gcttcagtca	600
	ggtctggcag gaaaacggac tggatcataa ctggctgccg ctgccggtac atccgtggca	660
40	gtggcaggaa aaaatcgcta ccgacttcat cgctgatttt ggccaaggca ggatggtgtc	720
	t	721
45	<210> 168 <211> 719 <212> DNA <213> Escherichia coli	
50	<400> 168 ggagtatatt gcgtgggtag tattccccaa aaagggttatg accaaaaatg gatatccctt	60
	atattattgag gttcataata aaggtagctg gagtgaggag aatactggtg acaatgacag	120
	ctattttttt ctcaaggggt ataagtggga tgagcgggcc tttgatgcag gtaattttgtg	180
55	tcagaaacca ggagaaacaa cccgtctgac tgagaaattt gacgatatta tttttaagt	240
	cgccctacct gcagatcttc ctttagggga ttattctgtt acaattccat acacttccgg	300

EP 1 770 171 A1

	catgcagcgt catttcgcga gttacttggg ggcccgtttt aaaatcccat acaatgtggc	360
5	caaaactctc ccaagagaga atgaaatggt attcttattt aagaatatcg gcggatgccg	420
	tcctttctgca cagtctctgg aaataaagca tgggtgatctg tctattaata gcgctaataa	480
	tcattatgcg gctcagactc tttctgtgtc ttgogatgtg cctgcaaata ttcgttttat	540
10	gctgttaaga aatacaactc cgacatacag ccatggtaag aaattttcgg ttggtctggg	600
	gcatggctgg gactccattg tttcgggttaa cggggtggac acaggagaga caacgatgag	660
	atggtacaaa gcaggtacac aaaacctgac catoggcagt cgctctatg gtgaatctt	719
15	<210> 169 <211> 561 <212> DNA <213> Escherichia coli	
20	<400> 169 aaatgaatgt ctggactcaa cgtggatttc atcaaaagga aactatattc agaagtttga	60
	aaataaattt gcggaacaaa accatgtgca atatgcaact actgtaagta atggaacggt	120
25	tgctcttcat ttagctttgt tagcgttagg tatatcggaa ggagatgaag ttattgttcc	180
	aacactgaca tatatagcat cagttaatgc tataaaatac acaggagcca ccccatttt	240
	cgttgattca gataatgaaa cttggcaaatt gtctgttagt gacatagaac aaaaaatcac	300
30	taataaaact aaagctatta tgtgtgtcca tttatacggg catccatgtg atatggaaca	360
	aattgtagaa ctggccaaaa gtagaaattt gtttgaatt gaagattgag ctgaagcctt	420
	tggttctaaa tataaaggta aatatgtggg aacatttggg gatattttcta ctttttagctt	480
35	ttttggaaat aaaactatta ctacaggtga aggtggaatg gttgtcacga atgacaaaac	540
	actttatgac cgttggtttac a	561
40	<210> 170 <211> 750 <212> DNA <213> Escherichia coli	
45	<400> 170 agcagcatca ggttctgagc tgcattgcca atcaaatgac aacggaagat attctggaga	60
	aactgaaaat atcgctaaaa acgctctact gccataaaca caatatcatg atgatcctca	120
	atcttaagcg gatcaatgag ctggtacgcc atcagcatat taattatctg gtgtgaacga	180
50	ttgaacaata taaagaggcc cagcaacagc cagacctccc gttaattata cgttatgcag	240
	taacgccttc cggatatcaac gaagcaattt gcttacgcca ttgcgcttgc tctgttcac	300
	cttctgtacg ttgaccataa agttgcgcta tctgcgtacc atcatgggca aacaattcca	360
55	gactggttac gtgaccatcg ctggtcgggt tacgggtaac ccaggcttca gcaatgctct	420

EP 1 770 171 A1

	cttctaataag atgaagggta aacgtcgggt tgaaaatatt cagccaacct ttcattggca	480
	ccactttttc taccacaccg gtgaaaatct gtacgcagcc acggttgcca acaaacacca	540
5	tgatttcatt gccatcctgc tgtgcagatt caagaatttg cgccaacgca ctggttgata	600
	ctttgcaggc caaatcgtct gccaccagat tgaacgcctg ttggcgcgctc aggttgtggc	660
	gcttgagcaa cgtaaaaaac tgatgaacgt cggtcacgcg ccgccactct tgctcgacca	720
10	cactggcatc ggctcgcggt tgaacaactg	750
	<210> 171	
	<211> 616	
15	<212> DNA	
	<213> Escherichia coli	
	<400> 171	
	ttcttcggta tcctattccc gggagtttat gatagacttt togaccaac aaagttatgt	60
20	ctcttcgtta aatagtatac ggacagagat atcgaccctt cttgaacata tatctcaggg	120
	gaccacatcg gtgtctgtta ttaaccacac cccaccgggc agttattttg ctgtggatat	180
	acgagggctt gatgtctatc aggcgcgttt tgaccatctt cgtctgatta ttgagcaaaa	240
25	taatttatat gtggctgggt tcgttaatac ggcaacaaat actttctacc gtttttcaga	300
	ttttacacat atatcagtgc ccggtgtgac aacggtttcc atgacaacgg acagcagtta	360
	taccactctg caacgtgtcg cagcgtgga acgttccgga atgcaaatca gtcgtcactc	420
30	actggtttca tcatatctgg cgttaatgga gttcagtggt aatacaatga ccagagatgc	480
	atccagagca gttctgcgtt ttgtcactgt cacagcagaa gccttacgct tcaggcagat	540
35	acagggagaa tttcgtcagg cactgtctga aactgctcct gtgtatacga tgacaccgga	600
	agaagtggac ctcaca	616
	<210> 172	
40	<211> 613	
	<212> DNA	
	<213> Escherichia coli	
	<400> 172	
	aaatggcgac aaattatacc gtgctgactc tagaccccca gatgaaataa aacgttcgg	60
45	aggtcttatg ccagagggc ataatgagta cttcgataga ggaactcaaa tgaatattaa	120
	tctttatgat cagcgcagag gaacacaaac cggttttgtc agatatgatg acggatatgt	180
	ttccacttct cttagtttga gaagtgtcct cttagcagga cagtctatat tatcaggata	240
50	ttccacttac tatatatatg ttatagcgac agcaccaa atgtttaatg ttaatgatgt	300
	attaggcgta tacagccctc acccatatga acaggagggt tctgcgttag gtggaatacc	360
	atattctcag atatatggat ggtatcgtgt taattttgggt gtgattgatg aacgattaca	420
55	tcgtaacagg gaatatagag accgggtatta cagaaatctg aatatagctc cggcagagga	480

EP 1 770 171 A1

5 tggttacaga ttagcaggtt tcccaccgga tcaccaagct tggagagaag aaccctggat 540
 tcacatcatgca ccacaagggt gtggagattc atcaagaaca attacaggtg atacttgtaa 600
 tgaggagacc cag 613

 10 <210> 173
 <211> 227
 <212> DNA
 <213> Escherichia coli

 15 <400> 173
 aagaagatgt ttatggcgggt tttatattgca ttagtttctg ttaatgcaat ggcgggcggat 60
 tgcgctaaag gtaaaattga gttttccaag tataatgaga atgatacatt cacagtaaaa 120
 gtggccggaa aagagtactg gaccagtcgc tggaatctgc aaccgttact gcaaagtgc 180
 cagttgacag gaatgactgt cacaatcaaa tccagtacct gtgaatc 227

 20 <210> 174
 <211> 260
 <212> DNA
 <213> Staphylococcus epidermidis

 25 <400> 174
 ccactttttc tacttctaaa acttcagcaa gtgtttcacg taacttgcta gaacgagtaa 60
 tttttatatc gtccttacca tcattttggt ctatggtaaa tatattcata ttattttctt 120
 ctttaaatat tgctgcatgt actgtaaaact tatcgtagtc aatcatagtt agtactgtat 180
 ctaggtgcat aaatgtgcgt gtattaggta tttcaatagc taogattttt ttaaaacttg 240
 tgtttgcac tttgaaaata 260

 30 <210> 175
 <211> 422
 <212> DNA
 <213> Staphylococcus epidermidis

 35 <400> 175
 ttgataacaa acaaattctg ctatttcatt tgaagaagtc aaaatcatca aagtatcgtt 60
 acctccaata gttcctaata tttctttcat ttgtaattga totatgtaat aacttatact 120
 ttgagcaaag ccaggagatg tttttattaa gacatagtta tttagcgta taaattcaat 180
 aatctcatca ctaaataattt ctaattgttt ttttgcactt aattgatttg tttgatttat 240
 tttcttgtaa atatactttt tattttcaac agggattttg taaatttcta attcttgtaa 300
 gtcacgagaa atagttgtca agctatagta aactccaaaa tgtcttgcca tgtaatccac 360
 tatttggtgt tttttattaa actgattctg ttgtataaca gttaagataa gatttaaacy 420
 tt 422

 50 55

EP 1 770 171 A1

<210> 176
 <211> 322
 <212> DNA
 <213> Staphylococcus epidermidis

5

<400> 176
 taacactgaa cccaatgac ctacaatatg ttctaatact tgtgccattg atggattagc 60
 aagttttgaa atttggttct gctgaatgac accttgggct agtacagtca ttaagaaata 120
 10 aatgactagc acagaaatca aaccaataac ggtagcagtt cctacatcct ttttagactt 180
 tgcacgtcca gaaaagacaa cggtccttc aatcctgtg aatacccata cagttactaa 240
 catagtactt ttactttgtg ccattgtatc tccccaacta aaaacgccaa cacttccact 300
 15 agtcatacca taaaaaccgg at 322

<210> 177
 <211> 733
 <212> DNA
 <213> Staphylococcus epidermidis

20

<400> 177
 cctcaaacia gcagaaaaag ctaaaagcga agttacacia tcaactacia atgtatctgg 60
 25 tacacaaaca tatcaagacc ctaccaagt tcaacctaaa caagacacac aaagtactac 120
 atatgatgca tcattagatg aaatgagtag ttataatgaa atttcatcaa atcaaaagca 180
 acaatcttta tcaacagatg atgcgaatca aaatcaaacg aattctgtta caaaaaatca 240
 30 acaagaagaa acaaatgatt tgacacaaga agataaaaca tccactgata caaatcaatt 300
 acaggagaca caatctgtag caaaagaaaa tgagaaagat ttaggagcta acgcaaataa 360
 tgaacaacia gacaagaaga tgactgcaag tcaaccttcc gaaaatcaag caattgaaac 420
 35 tcaaaactgct tctaatagata atgaaagcca acaaaaaagt cagcaagtaa cttctgaaca 480
 aaatgaaact gctacaccta aagtatcaaa tacaaacgca totgggttata attttgatta 540
 cgatgatgaa gacgatgata gctcaacaga ccatttagag cctatctcat taaacaatgt 600
 40 gaatgctaca tctaaacaaa ctacttcata taaatataaa gaaccagctc aacgtgtaac 660
 aactaatact gtaaaaaaag aaacggcatc taatcaagcg actatagata caaagcaatt 720
 45 caccocatctt agt 733

<210> 178
 <211> 507
 <212> DNA
 <213> Staphylococcus epidermidis

50

<400> 178
 cttagggaaa aagatgggta gtaatgttaa agattctaaa attacaccga ataaaaataag 60
 tttatttacc ggttcttttag ttactaatga aataactacg atagtacaat ataaaaatat 120
 55 ggagagtatt ttttttcgct ttacaagacg totaggtata gggtgtttct tagttgctgc 180

EP 1 770 171 A1

	aggatgcgtat aaaatggtaa taattaatcc gactaatgcc atagataaaa gaacaaaata	240
5	gttaatatct aactttatta ttaagtatgg aaagataata aagaaaatta tgttctgaat	300
	atgacataac aatgacgaat ttgcatgctg accgtgtgca tgtctcctaa ttaaaaaata	360
	acttaaataa gttaaaagtg tgtaaaagaa agtatgaaag attattgcta gccatacac	420
10	aactatagac ttttcaatat ttatcgctag tacctgcac cctaaacgaa tttttagaaa	480
	ctgtatgtga tctaagttat ttttacg	507
15	<210> 179 <211> 512 <212> DNA <213> Staphylococcus epidermidis	
20	<400> 179 cctcgcatat cagtttgtga caccatataa agtaaaataa atgatatgaa aagtactatt	
	gttattatca ataagtatct tttattgagt gacaagtagg atacttttaa tttattgaac	120
	aatagttgag ttaaataagc aataattaga gttatgatta caaaagaggt aaaatgtatt	180
25	aactgtaaag caaatttaaa cggaatataa tcttttatag tcaaagtgtat gtatacagtt	240
	atgaaattag ttatatataa gatcatagtg gtgaataata caactaatat tgaataaagc	300
	tttatttttg tataaaagaa aatgggtgatt attataacca aaactattaa tgctttactt	360
30	tgccaaaagt aatacattat tgcagaaggg attacaatcg taaaaacgat tatgtaatcc	420
	ctaaaattaa atttcatatt aatgataact ttagtaacct aaatcattaa aaagatttgt	480
	aggcctgcaa acggaaatag attaatatca tc	512
35	<210> 180 <211> 534 <212> DNA <213> Staphylococcus epidermidis	
40	<400> 180 atgaagcaca accaccatac cttgtaaatt ttttttagat ttagttaaaa tggggataca	
	agatacatcg aaatatttag tatgtacgtt attaatagca acttctaatt gttcatagat	120
45	aactttttca gttctaaaac tttcaataat taatttttca atactatcat ctatgaaacc	180
	aatgtaactt ttattttcta ccatttgatc aggggttaaac acctgataat aagcatgatt	240
	agcaactaca atttctccat gtttatcaat catcagtagt gaactcggta tattttctaa	300
50	ggtagttttt aatctattgg attgaatttt ttgactattg ttttaattttt gcaatcgtcg	360
	tgctaagtca tttgtagtca caaataatgc cctagtttcc ttcacattac tttctggaac	420
	acgaacatgg taatatccat ctgctagaag tgatgtagca taagttactt cattgatagc	480
55	tctaataatat gttcgattga tacttctact tgctaaatag accgtaaata atac	534

EP 1 770 171 A1

<210> 181
 <211> 286
 <212> DNA
 5 <213> Staphylococcus epidermidis

 <400> 181
 ctaagcacaa gaaaggctca atattagcta tcatagggttt gctaattgta tttgttggtta 60
 10 cagggttttat cttctttttca atgattttcag atcaaataatt tttcaaacat gtcaaaccag 120
 ttgaaaagggt tgaaaaatta gataaaactt tagataaagc atctaaaaag caaatacaca 180
 attatacgag ccaacaagta tctaacaaag caaatacagc ttggcgtgat gcgtctggta 240
 15 cagaaattaa agaagctatg gatagtagta aattcataga tgatga 286

 <210> 182
 <211> 381
 <212> DNA
 20 <213> Staphylococcus epidermidis

 <400> 182
 acgacgaatg attcataagg tttaatatgg tctaaattta tatcatttaa gtgataatta 60
 25 tgcaatttta tatctacaga tgaaatatct aattcaaaag gtaggttttag ttctgataact 120
 tcattttgtga gattggctac aattaatata gtattgtttt taaatgtgcg tgtatatgca 180
 aaaacctgct tattttcagc atcgaccata ttaaacttac cgtagatgta aatcaaatca 240
 30 gattttttta gttgaattaa cgttttataa taagaaagta tcgaaaactt atcatttagt 300
 tgttgtttaa cattaatttc tgtatagtta gggtttacat gaaaccatgg cttaccagta 360
 gtgaatccag cattgataga a 381

 35 <210> 183
 <211> 272
 <212> DNA
 <213> Staphylococcus epidermidis

 40 <400> 183
 ttaaaccatt aggaaatcgt gtgattattg agaagaaaga gcaagaacaa gcagctaaaa 60
 gtggcatcgt ttaacagat agcgctaaag aaaaatcaaa tgaagggtgtg atcattgcag 120
 45 ttggacaagg tcgtttatta gacaatggca cacaagttgc tcctcaagtc agtgaagggtg 180
 acacaatcgt cttccaacaa tatgcaggta ctgaagtaaa acgtggcgcc caaacatatt 240
 taatttttaa tgaagaagat atattagcta tt 272

 50 <210> 184
 <211> 614
 <212> DNA
 <213> Staphylococcus epidermidis

 55 <400> 184
 tcaagacacg ctttttagtg ttttatctct agaatatcct gaaaaagaaa ttatcattat 60

EP 1 770 171 A1

	caatgatgga agttctgata atactgctga aatcatctat gaattcaaga aaaatcatga	120
5	ttttaaattt gttgacctcg aagtcaatag aggtaaagct aatgcactca atgaggggaat	180
	caaaacaagca tcttacgaat atgttatgtg cttagatgct gacactgtca ttgatgacga	240
	tgcgcctttt tatatgattg aagactttta aaagaatcca aaattaggcg cagttacagg	300
10	taatccacgt attcgttaata aaagtctctat cttaggaaaa atacagacca ttgaatatgc	360
	aagtattatt ggttgatatca agcgaagtca atctctagca ggagcaatca atactatttc	420
	aggtgttttc acactattta aaaaaagtgc actcaaagat gtaggttatt gggatactga	480
15	catgattact gaggatatcg ctgtttcatg gaaactccat ctttttgatt acgaaattaa	540
	gtacgaacca cgcgcacttt gctggatggt ggtgcctgaa actatagggtg gtttatggaa	600
	acaaagggtt cgat	614
20	<210> 185 <211> 329 <212> DNA <213> Staphylococcus epidermidis	
25	<400> 185	
	gttttcttat tacgaaccac attggttcta ccaattttca taatttaaatt ttactttcaa	60
	aaaagcaatt agatgaaatg tatgaaacag gcttatggga ctttgaatct catactcatg	120
30	atttacacgc tcttaagaaa ggcaataaat cgaagttttt agattcgtct caatctgttg	180
	ctagtaaaga tattaataaaa agcgaacact atttaaataa aaactaccca aaaaatgaac	240
	gcgcacttgc ttaccatac ggattaatta atgacgacaa aataaaagct atgaaaaaaaa	300
35	atggaattca atatgggttt acacttcag	329
	<210> 186 <211> 220 <212> DNA <213> Staphylococcus epidermidis	
40	<400> 186	
	ttattctgct atatgatatt cacgaatatt gttatcaata gatttttaaat agaaaatgtc	60
45	acgatctgca tttgatTTTT caagttcatg attcaattct aattgggtcaa agcgtttgaa	120
	gaaatgttca tattcatcaa cagaaacctc tattctatta tttataaaag atttgtggcg	180
	ctcaacatct aattgctcct tgaatccatc tactaatgtt	220
50	<210> 187 <211> 210 <212> DNA <213> Staphylococcus epidermidis	
55	<400> 187	
	acattaagtc agcatttggg gaaaacatga ataaatgtct aaaccatatc gcaatgggtt	60

EP 1 770 171 A1

	gacgataatc aaattcaggt tgaatcgcat tggttacaag cgtagaataa caaccatta	120
5	ttaaaataat caacaaaacg atattcacia atatatctga aaatgaactt aatcgtctaa	180
	cgtttttgat ggatagtcgt cttaaagtta	210
10	<210> 188 <211> 200 <212> DNA <213> Staphylococcus epidermidis	
15	<400> 188 attagagcca aagtactctc caccgtaacc ttgacttctt tgcgctttat aagtatctaa	60
	atatgtttct ttatgggaag aaggcacaac aaaacgatct tcatatttag caatacctag	120
	taagcgatac atttcagtca tctgtctttc agtaagtcct aatcgttcta atttagaagt	180
20	atcgaaaggt tggtttgta	200
25	<210> 189 <211> 284 <212> DNA <213> Staphylococcus epidermidis	
30	<400> 189 tttgatacct gtaatttggt cttgccaaagc gggagtatat ttagaagatg cgatcatcata	60
	agatgtagct tctagttcgt gttcaaaacg ttgaacacca tattgactcg tcattaaatc	120
	ataaaccgta gcaattttta cttcttctcc gtttagctaac tgaatagttc tcgttgcaat	180
	aggtctctca aagataccat caccactgct atcaaaatat ggaaattgaa tcgtttcaac	240
35	atgatagtca ctttcaacca ttgataacat tggatcaatt ggtg	284
40	<210> 190 <211> 721 <212> DNA <213> Staphylococcus epidermidis	
45	<400> 190 agcttctcgc actacttgac taggatcatt agtgacctct attoctacca ttaaacctac	60
	accacgtact tcaattacat ttcttttatt tactaaactt tttcttaagt tttcaataag	120
	aaattgcccc ttgattgaa catcattcag caaatcagca tcattaatga tagaaagcgt	180
	ttggtttgca gcagccaatg ataattctatt tccaccgaat gttgtaccat gagaaccgta	240
50	gccaaatgca tgacctaaat tctttttgcc taacattgct ccaataggaa ggccattacc	300
	taatccttta gctaattgtga tgatatctgg agacaattga taatgttcat gagcatataa	360
	cttaccgggt ctacctatgc ccgtttgaac ctgcgtctaca attataagga tatctttttg	420
55	tttacaatac tcatttaatt gcttcataaa taaaggatca gcaggtagta ctctgattc	480
	accttgaatt attttataa ttacagcagc agtattatth gaagttaatg atttaaatga	540

EP 1 770 171 A1

	attaaaaatca ttaaaaaatag caaatattgaa tccaggaaca accggaccaa attgatctgt	600
5	aattttcttc tgcctgttg cagacattgc gccgtacgtt ctgccgtgaa aagacttttt	660
	aaaagcaata atttccgact taccagtagc tttacgtgcg agtttgatag ctgcctcatt	720
	c	721
10	<210> 191 <211> 465 <212> DNA <213> Staphylococcus epidermidis	
15	<400> 191 aaagaaatta agtctctagc caaatgtat cttggtggta gtactgaaat taaaacatca	60
	caacttaaag gtaaggatga ctacttaaat gatataact attaccacc aagcgtaaaa	120
20	agtattatgg aatattcaaa tcttttacgt aatgatttag atttatctca aataacaaac	180
	aaaaacgatt tcttagatca aagagtcatt aaacgatatg gttcactcgt acccttaaca	240
	gaattagatg aagacttatt gcgtaagaac caaaaggaat cgactgatag tcagaaagag	300
25	tctgattctt catcacaaaa taatgatgaa gaagatcaaa ctaacgaaca aacagaccaa	360
	aatagcttaa acggaacga acagtacca aatcaacaag acaacaatca aaccaatggt	420
	gaaaatggta tgataaataa tgacaattat ccttacgcac aataa	465
30	<210> 192 <211> 362 <212> DNA <213> Staphylococcus epidermidis	
35	<400> 192 aaccaaacga tgctagatga ttgctttgaa ataagaaagt gtgttttcgt cgaagaacaa	60
	ggcgtaccac tcgaaaatga atttgatcaa tatgaagatt actcattcca tatagtggga	120
40	tatataaatg gtgttcctat ggcaactgct agaattagac ctttaaatac tcatatttgt	180
	aaaattgaac gtgtagcaat catcaagtgg tatcgtggc ttgggtacgg taaaaattta	240
	atacatgcta ttgaaacaat tgcaaaaaa caccaatata atgaactcac tatgaatgct	300
45	caattacaag ctcgagactt ttacttaaaa ctaggttact caccttttgg taaagtattc	360
	tt	362
50	<210> 193 <211> 320 <212> DNA <213> Staphylococcus epidermidis	
55	<400> 193 agttttataa tattcagtgc aaaattcaat tattgcgttt tgaagtggat aatagtattc	60
	ggttggtaaa gatagttcat tatataaata aaatttttct ctattagttt tacatttgat	120

EP 1 770 171 A1

	ttgttccttt ttccactggt ctgtccatct agattcttct atatttataa tttctaaaaa	180
5	tagatcttct tttgttttaa agtgataata aagattccct ttactacttt ctgataattt	240
	aacaatttct ccagtagtag tggcattata tccatttttt ataaataatt cctttgcgac	300
	acctagtatt ttatctttca	320
10	<210> 194 <211> 503 <212> DNA <213> Staphylococcus epidermidis	
15	<400> 194 tttagagaga cagctagata atttgaaaac atttggcgta gagaaaatat ttacagagaa	60
	acgatcgggg aaatcagtag aaaatagacc tgtatttcaa gaagcactta actttgtgag	120
20	aatgggcgat agatttgttg tagaatcgat tgatcgctta ggtcgtaatt atgatgaagt	180
	gattaacaca gttaattatt taaaagataa agagggtcaa ttgatgatta ctagcttacc	240
	tatgatgaat gaagtcattg gcaatccatt attagataaa tttatgaaag acctaatcat	300
25	tcaaatatta gcaatgggtt cagaacaaga acgaaatgaa agtaaacgta gacaagcaca	360
	aggtattaaa gttgcgaaaag aaaatgggtg atataaagga cgcctcttat tgtactcacc	420
	taatgctaaa gatcctcaaa aacgcattat ttatcataga gttgtagaaa tgttagaaga	480
30	aggtcaagca attagtaaga ttg	503
35	<210> 195 <211> 320 <212> DNA <213> Staphylococcus epidermidis	
	<400> 195 tgaaagaagg gatagttttg cactttacac aacgtgaaca agacaaattg atgatagttg	60
40	tagctgctga ggttgcacgt cgtagaaaag caagaggact taaacttaat catcctgaag	120
	cacttgcttt aatcagtgat gaattattag aaggcgcgcg tgatggtaaa acggtagctg	180
	aactcatgag ctatggaaaa acaattttta acgaggaaga tgatcatgat ggcgtagcta	240
45	acatgattac agaacttgaa attgaagcaa cttttccaga tggtaactaag ttaataacag	300
	tccatcacc aatcgtttaa	320
50	<210> 196 <211> 503 <212> DNA <213> Staphylococcus epidermidis	
55	<400> 196 atgcaaatta tggagatgaa gctactttcg gtggcggaat atcaattcgt gatggatatg	60
	ctcaaaatcc taatgtgaca agagatgata aaaatgtagc cgatttagtt ttaactaacg	120

EP 1 770 171 A1

	cattaattat tgattatgac aagattgtta aagcagatat cggaattaaa aatgggttata	180
5	tttttaagat cggtaaagct ggaaaccag atataatgga taacggttgac atcatcattg	240
	gtgcaacaac tgatattatt gctgctgaag gtaaaattgt tactgccggc ggtatcgata	300
	cacacgtgca cttcatcaat cctgaacaag ctgaagttgc acttgagagt ggtattacaa	360
10	cgcatatcgg tggaggaact ggtgcttctg aaggtgctaa agcgactact gtaacaccag	420
	gaccttggca tattcatcgc atgttagaag cagcagaaga gatgcctatt aatgtaggat	480
	ttactggtaa aggtcaagct gtc	503
15	<210> 197 <211> 452 <212> DNA <213> Staphylococcus epidermidis	
20	<400> 197	
	tgattataga agaaattcaa ggaaatattg ctaatttatc tcaagatgaa aagcaaaaaac	60
	atgtcgaaaa agtttatctt gaaaactcag atttggttaa acgtatacaa cgtgttaaaa	120
25	cagatcacgg taatgaaata gggatcacgc ttaaacaacc tattgacctt caatatgggtg	180
	atattttata tcaagacgat acaaacatga ttattgtcga tgtaaatagc gaagacttat	240
	tagttattaa acctagaaat ttaaaggaaa tgggagacat tgctcatcaa ctaggtaatc	300
30	gccatctgcc tgccaattt acagaaactg aaatgcttat tcaatatgac tatcttggtg	360
	aagattttatt aaaagagttg ggtatcccct actcacatga agacagaaag gtcaatcaag	420
	catttcgaca tataggacat tcacatgatt ga	452
35	<210> 198 <211> 524 <212> DNA <213> Staphylococcus epidermidis	
40	<400> 198	
	ttaacttatt cagatgggat agctatgaga attgtctacc acgcattaat taacaatgac	60
	aaagataaaa ttttagatat taacaaaaaa ctcttcgtac aaaatctacc taaagaaacg	120
45	cgtattggcg ctaagcaaatt gggtacacgc atggtaaaat tagctttaga tctttatgat	180
	agtgaatgga ttcaatggta ttataatcaa atgaaaaaca ataaaattaa gcttcacatc	240
	gctgtgtgct ttactatgct aggacatttt ttaggtgtag atgtggaatc catcattgat	300
50	tattatttat atcaaaatat ctctagcctt acccaaatg cagtaagagc gattccttta	360
	ggacaaacag ctggacagca agtcgtaact gaaatgatag cccatattga gaagacacga	420
	aatcacatac tagaattgga cgaaatcgat tttggtatga ctgctcccg cttggaactt	480
55	aatcaaatgg aacatgaaaa tgttcatggt cgaatcttta ttcc	524

EP 1 770 171 A1

<210> 199
 <211> 500
 <212> DNA
 5 <213> Staphylococcus epidermidis

<400> 199
 tcgtatatgg aatttgtagc agatcctatt attgcctatg aaaacgctaa atttttccaa 60
 10 cataatacgt ttaatcctaa agaagatagt gctatgtttt aactgatat attgactcca 120
 ggctattcat ctaatggcca agatttcacg tataattata tgcactttat taatgaaatt 180
 tacattgaca atcaattagt tgttttcgat aacatgatgt taagtcctga taaaagcaga 240
 15 cttgacggca ttgggtatat ggaaaattat acacacttag gatcagctta ttttattcat 300
 ccagatgtaa accaaagttt catagacgat atttacgcgg cggttgctga ttttcaaaaa 360
 caatacgact gtagaatagg tatctcacia ttacctactc atggattggc cgttcgtatt 420
 20 ttgactaaaa gaactcaa atagaagaa attttgactc gtgttcaatc atatatcaat 480
 caaacgattt atcatcgaca 500

<210> 200
 25 <211> 363
 <212> DNA
 <213> Staphylococcus epidermidis

<400> 200
 30 gcttaacaac gtaaaacaag ctggcggtga tcaaattgta actattattg gtcattggcg 60
 tgagagtgtg aaagatacat tgggtaatca atcattatat agttttcagg ataaacaact 120
 tggaacagct catgctgtga aaatggcaca tgaacattta gcagataaag aaggaactac 180
 35 tctagtagta tgtggagata caccacttat tacataccaa actttacaat cacttattga 240
 acatcatgaa agtacacaat cacatgttac tgtattatct gcttctacta tcaatcctta 300
 tggttatgga cgaattatta gaaatcataa tggaatatta gagcgtattg ttgaagagaa 360
 40 aga 363

<210> 201
 45 <211> 780
 <212> DNA
 <213> Staphylococcus epidermidis

<400> 201
 agctcacggc ttttaactatg ctatttataa agatgtgggt ttagatttct gaaaactgga 60
 50 atatattctc tttgttgatc tactaagtct acatcgatat gtgttgtag tactccttct 120
 ttatcatcta aatgggtctaa aatttcacca ttaggattaa tgacaattga atttcagca 180
 taattgggtgt gaccatcatc accacaacta ttacaagcta caataaaaat atcattttcg 240
 55 attgctctcg cttttagtaa tgataaccaa tgatctagtc ttgagctagg ccactgcgct 300

EP 1 770 171 A1

	acataaaaaag caattttagc accttttcta gctggatagc gcaatatctc tggaaatcgc	360
	aagtcataac aaatgatttg cgtcacaagt gtttgatcag ataaataaaa aggttcaggg	420
5	actacatttc caccacataa aaagtctggc tcacgtaaca ttggcacgag atgtactttg	480
	tcataattcat taatcaattc tttgttttta ttaattgcaa aagcagtatt atatatatgg	540
	ttttctotta tatttgacac tgaacctgca atgatatcta cattaaatgt atgtgctaag	600
10	tcttttataa agagagagct gtctttaaga tttttatcag ctttttggtc taattcttct	660
	aatgcataac cgttattcca cattttctgga agcaogacga cactgggtatc tttatctaag	720
	tattgattaa acttagtttt gatattttgc atatttttat caacatttcc acgttctaca	780
15		
	<210> 202	
	<211> 501	
	<212> DNA	
	<213> Staphylococcus epidermidis	
20		
	<400> 202	
	gtattttacgt gcgtttatatt gtgtcataat catcgtgaca cacttactaa cgcaaatcac	60
	tttagaaaaat gaacagatgt ctgatagttc actcatattg caatattata taogcaatat	120
25	ttttatttttc ggacocccta gttttataat attgtctcaa ttattaacaa cattaaatta	180
	cgaatcagta actataaatt atcttttttc aagatttaag tatattttta ttccatatct	240
	tttaateggc ttgttctata gttatagtga atcacttate accgcttctt cttttaaaaa	300
30	gcagttttatc gaaaatgttg ttttaggaca atgggtatggc tatttcatta tcataattat	360
	gcagttcttt gtcttatctt atatcattta caaaattaat tttagattgt tcaatagtaa	420
	aattttgctg ctttttagcat ttatagtcca acaatcttat ctacattatt ttttgaataa	480
35	tgacactttt catcaattca t	501
	<210> 203	
	<211> 300	
	<212> DNA	
	<213> Staphylococcus epidermidis	
40		
	<400> 203	
	ggtcaagccc agacagaggc aatatccaac ggtaacctct tatttaaata tagttaggga	60
45	gagcttatatt attactatat ccggagtatt ttggatgtat tgtatcgttg tgatgattgt	120
	ttatatagga actcttatca attctcaaat ggaaagtgtt ataacaatac gtattgcatt	180
	aaatgttgaa aacacggaaa tttacaaatt attcggatgg atgagtttgt ttgtacttat	240
50	tatatattatc ttttttacat ttagtctcgc gtttcaaaaa tataagaaag gtcgtgacat	300
	<210> 204	
	<211> 406	
	<212> DNA	
	<213> Staphylococcus epidermidis	
55		

EP 1 770 171 A1

	<400> 204	
	cattttaacag tgaatatact tgggtctttaa aacgggttttt actgtcctca ataaccccga	60
5	atTTTTgtga aaaggaggct ctaaaatacc aagtctcaag aaaaagaaga attaaagttta	120
	taaagtoctc tttattcaaa gcgatgtgog taggatcata atactttatc aattcatcat	180
	gtaaggtagt attaatttct tgaagatggg gtttgatttc tgaattcagt gcttctggag	240
10	cactagataa ttgaacatat aattttaatat atctctcatc aacgtcgaat ataaatttga	300
	ataaaaaactg gtaaagtcog tcaatggaat aattatcgtc atggttccta agcaaaaaat	360
	ctataaagta attgaaacaa ttctcaacac tttttcgata tatttc	406
15		
	<210> 205	
	<211> 325	
	<212> DNA	
20	<213> Staphylococcus epidermidis	
	<400> 205	
	atgtcaaaat tagcagaagc tattgcaaat acagtaaaag cagcacaaga tcaagattgg	60
	actaaattag gaactagtat cgttgacatc gtagaaagtg gcgttagcgt attaggtaaa	120
25	atcttcggat tttaattaat cttagttttt taaaatataa atttaaataa ttaattaggg	180
	agagataaac atgtcaaaat tagcagaagc tattgcaaat acagtaaaag cagcacaaga	240
	ccaagattgg actaaattag gaactagtat cgttgatata gtagaaagtg gcgttagcgt	300
30	attaggtaaa atcttcggtt tctaa	325
	<210> 206	
	<211> 451	
35	<212> DNA	
	<213> Staphylococcus epidermidis	
	<400> 206	
	tgacacaata cctcatgaac caccacaata agttgatacc cctcacttat tttgtaaaga	60
40	aatttaaaca agcaaaatcg tcaattagtg aagacgttca aatcattaaa aatacgtttc	120
	aaaatgaaaa attaggaact attattacta cagcaggtgc tagcgggtgga gtaacctata	180
	agcctatgat gagtaaatca gaggccacag aggttggtga tgagggtgata gagcaattac	240
45	aagagaaaga ccgtttgcta cctggaggat atttattttt atccgattta gttggtaatc	300
	cttctctatt aaataaagta ggtaagttaa ttgctagtat atatatgaac gaagaacttg	360
	atgctgttgt taccatagcg actaaaggga tatcacttgc gaatgcagtc gcaaacgtat	420
50	taaatttacc tgtagtgggt ataagaaagg a	451
	<210> 207	
	<211> 300	
55	<212> DNA	
	<213> Staphylococcus epidermidis	

EP 1 770 171 A1

	<400> 207	
	gtgacagatg taagacttag aaaaatacaa acagacggca gaatgaaagc actcgtttcc	60
5	attacgctag atgaagcttt tgtaattcat gatttacgtg taattgaagg aaactcaggt	120
	cttttcgctg caatgccaaag taaacgtaca ccagatggcg aattccgtga catcgcgcat	180
	cctatcaatt ctgatatgag acaagaaatc caagatgcag tgatgaaagt atatgatgaa	240
10	actgatgaag ttattccaga caaaaatgct acttcagata acgaagaatc agacgaagct	300
	<210> 208	
	<211> 380	
15	<212> DNA	
	<213> Staphylococcus epidermidis	
	<400> 208	
	atgaaaataa tcaactcaga taagggtacc gaagcactag gcccatattc gcatgcaact	60
20	gttataaacg gttttgtctt tacatcaggt caaattccac tcacacttga tggaacaatt	120
	gttagcgatg atgttcaaga acaaactaag caagtttttag aaaatttaac tgtgggtatta	180
	aaagaagcag attctgattt gaattctgtt gttaaagcga caatctatat ttctgatatg	240
25	aatgatatttc aacaaattaa tcaaattctat ggaaactatt tcgtcgaaca ccaaccagct	300
	cgtagtgttg ttgaagtgtc acggttgctt aaagacgtaa aggtagaaat tgaattgata	360
	ggtaaagtga aggaattata	380
30		
	<210> 209	
	<211> 245	
	<212> DNA	
35	<213> Staphylococcus haemolyticus	
	<400> 209	
	atgaacatga ggcacatcat ctttcttaat ggcattcggt tttatggcta tcatggagcg	60
	cttcatgcag aaaaatgaact tggccaaatt tttatagtag atgtaacact taaagttgat	120
40	ttgactgaag cagggaaaac ggataatgtc aaagacactg tgcattatgg tgaggtcttt	180
	gaagatgtta aaaacattgt tgaagggcc a tottgtcaat tgatagaaca tottgcagaa	240
	cgtat	245
45		
	<210> 210	
	<211> 563	
	<212> DNA	
50	<213> Staphylococcus haemolyticus	
	<400> 210	
	ttgaattggg aacgacagct ttgaaagggt caatcgattc agcaaattatt gatcctaata	60
	taatacaaca agttatatttc ggtaattgtc tacaaagtgg tgtaggacaa aaccagcac	120
55	gtcaaattgc gattaaagcg ggtgtacctg atacaacacc agctatgaca attaattgag	180

EP 1 770 171 A1

	tatgtggatc aggtcttaaa gcaattatat tagggaaaca gttaattcaa ttaggtgaag	240
	cggatgtagt agcagtgggt ggagttgaaa gtatgacaaa tgccccacaa ttaatcttaa	300
5	aagaaggtca agaaccagtg gaaagcttta tgcattgatg ttttaacagat gcctttcatt	360
	atgtaccaat ggggtgtaaca gctgagaaca tagctgaaaa atatgacatc acgcgtgaaa	420
	tgcaagatga gttcgcaaat cattcacaag ctaaagcagc taaagcgacg caagatggta	480
10	aatttaataa tgaaatcatc ggtatgactg acgcagaagg ggaacaaatg acttctgatg	540
	aaggtgttcg cccaaatagt agt	563
15	<210> 211 <211> 231 <212> DNA <213> Staphylococcus haemolyticus	
20	<400> 211 aatgacgatg aaacttcctt tgcacaccgt gttgaagcgg atggctggga aatgaattg	60
	gctatggttt ttgttgttat taataacaaa tctaaaaagg tatccagtcg ttcaggcatg	120
	tcacttacac gtgatacatc acgtttttat caatatttgt tagataacgt tgaaccagat	180
25	ttgaaagaga ctaaagaagc cattgctcaa aaagatttca agcgtatggg t	231
30	<210> 212 <211> 278 <212> DNA <213> Staphylococcus haemolyticus	
35	<400> 212 catcaattgt gtgataatga taagaattat atgcaagttg ttaaaccatat tggttcttta	60
	gtgtattcag ctagtgaagc gattgagcat catagttttg atcaattagc tacaatcttt	120
	aatcaatgtc aagatgactt aagaacattg acggtgagtc acgacaaaat agaaatgttt	180
	cttcgcttag gagaagagaa tggttcagtc gctggcaaata taacagggtg cggccgtggt	240
40	ggtagtatgc ttatcttagc taaagaattg caaacagc	278
45	<210> 213 <211> 200 <212> DNA <213> Staphylococcus haemolyticus	
50	<400> 213 acgtatatcg tctgaatat tttctaagta gtaaataagac ttatcgatc cagtttggtc	60
	agtagcgtga tcgaattcta aatcatcgaa tcgcttgaag aaactttcat agtcttcaac	120
	tgaaacttct tgacgttcat tcaataaggc tttatgtcct tcaatatcta attgtttttc	180
	atagccttcg actagcgtag	200
55	<210> 214	

EP 1 770 171 A1

<211> 565
 <212> DNA
 <213> Staphylococcus haemolyticus

5 <400> 214
 aatcgtcac ttgtcttttg aaaatgactt catataaact ttgcctaact taatttgaaa 60
 ggtaaggttt atggcgcac aatttatata actagagaag acctttaaaag cattccaaaa 120
 10 tagtcgtagt agtcacgaac aagatagatt atttatagat atagtaaacc acatacaacc 180
 taaacttttt ataaaaattt aaagtatatg aatacaaaat gaagatattg aagatttagt 240
 acaagaaact ttaatcagga tttatttagc acttcataca tttgatttta gtacagacgt 300
 15 tccttttgaa cactatttga attgtatcgt acgatcgatg cgaaatgatt tttggagaag 360
 aaaatatatt gagactgata agtacgatag catcattaat gactatgtta ttgactacaa 420
 attgaatcaa tcaagtaa atattgaaga ttttgtatg ataaaagaga aacgagaatt 480
 20 gctagcgagt agtttaacag tattaagtcg attcgagcga aacgtagctg aattactaat 540
 gtctgattat acgcctagt aaatt 565

25 <210> 215
 <211> 635
 <212> DNA
 <213> Staphylococcus haemolyticus

30 <400> 215
 ccaagatgct aatgtgtctt caaaagaatc ggaaatcgac aaaaatatta ataaagtaga 60
 cgacgcgcag tcttattctc aacaaaatga gcaacaatcc tcaaaagccg aaaataagga 120
 aatacagaat tcaacacaag cagaacaagt tgaaaaacag gaacaacctg cttctaataca 180
 35 gacggctaata cactcttcaa aagagtcctc cattaataat caggaaagtc ataacaaaca 240
 gcaacctagt gatgacaaaa cacctaatat caaaccagaa aaaattgaaa aagtagataa 300
 tcataagcgt attcaagatc agtatcaaga taaaaacaag cagggttgata ataatacaatc 360
 40 taacaattcg caattaaacc aaaaagaaca tcccaattca tcaaataata aacaacaaaa 420
 gcaacgtota gatgttaa acacaaaacga taaccaacaa ttacaatctc gaaatgatgt 480
 aaaagaaaaa ttagataaac agccaattga gcaaaaagat accaagctgc aaagtaacaa 540
 45 taaaagcaaa gacaacacaa cttctgtaaa gtcacacagc caacaacata aaccgcattc 600
 attaaagacc caatcccatt taactccagg tcaaa 635

50 <210> 216
 <211> 468
 <212> DNA
 <213> Staphylococcus lugdunensis

55 <400> 216
 tgcaattaa acagttaggc attaatgatc aatgaattg cgtaaaattg tataatgata 60

EP 1 770 171 A1

ccaaggagcg tgacgctaatt ttgaaggcga tagacaaaaa aattgaaaga tttgctagat 120

acttgcagcg tcaaaacaat ctagaccata ttcaattttt gaagatacgc ctaggcttac 180

5 aagtcgcatt aggtaatttt ttcaaaacta ttgttactta tgggtgttgct cttttattcc 240

atacctttct ttacacatta attacacact taacgtattt tttcgttaga cgttttgccg 300

atggtgcaca cgcaaggcca tcattgttgt gccacattca aaatttagtt ttatttgtgg 360

10 cattaccttg gtcaattgtg ctttttcaag tgtcttggac attcatgatt tttgtagcat 420

ttatcgcatt cataattatt atatgttacg caccatcggc aactaaaa 468

15 <210> 217
<211> 450
<212> DNA
<213> Staphylococcus lugdunensis

<400> 217

20 tttaatgttg ttatttgttg ctaaaatagt agccgatatt aaatttcaaa tgagggatta 60

ttttgccatt tttggtatca taatcccttc aactatactg tttggcgtga taggtagaca 120

gtctttaata tttttgataa ttggatgttt aatattcttt tatttgaaaa taggcttata 180

25 ttccgtttta gcaatctttg gttctgcgct tattatgtat gtttagtaatt atatttctgt 240

catccttagt gtaattgctg attatttttc ttttaagttat atagttcaaa taataataat 300

attagtttctg tttactctaa tatcaataat ttgtgcttat ttcattaggt ttctattaat 360

30 aagctcaaaa aaaacctatc tgtatttcaa caaaatatac atatcagtaa tatctatttt 420

ccttatttta tctttgatca tgctctattt 450

35 <210> 218
<211> 466
<212> DNA
<213> Staphylococcus lugdunensis

<400> 218

40 tatcaatctt tcaagcagtt atgttaataa ttgtagctaa aattattgca aacgttaagt 60

tttacttaag ggattattta gccgttgccg gcataatagt ccttctgcc gtattatttg 120

ttgttttttg cagacaatca attatctttt tacttattat ttgtttaata tacttttatg 180

45 taaaaatagg gttttattct ataatcgcta tattaggctc tgccttaata atgtacataa 240

gtaacttttt ctacgtttca ctcataatat taataggtaa ttttatcaaa tttaggataa 300

tatacgtaat aatttcttta tcatcataca tactgatagg tgttttatgt gcatttatga 360

50 caaaatactt aattaataaa ctcaaaaaaa catacttatt ttttaataaa gtatacataa 420

tcgtcatatc tactttttta acatttacca tcgctatatt ttattt 466

55 <210> 219
<211> 512

EP 1 770 171 A1

<212> DNA

<213> Staphylococcus lugdunensis

<400> 219

5 caaaggagtg tgattttatg tcaaaaatgt tagttctttt ttctacatgt attcttttaa 60
tgctgatgtc gttaattttt atgcctgtta gtcattgcgcagggtttatcc tctaagcaag 120
caacgttgta tcagcagaat ccaaagata ctaatactca agtttcagga aaactgaata 180
10 attcgaaga aacaaaagca aatgatacag caaccttatt tgcaaaactct aaagtcaatc 240
aatatattat cgacaatcat cttcagcatt cgccagtagt aaaagatcca cgtatggata 300
cacttcctaa attagaatat aaaaacggca cttacatggg tgttggttatt cacgaagtgg 360
15 gcgaagacaa tcgctcctta caagtatggg tagatcgcat gtatgaaact tatactagag 420
catttgta caacattcgtt gataataacg aaatacatct tactgcacct gcagaatatt 480
atgtgtgggg agctggctct aaagctaata ca 512

<210> 220

<211> 646

<212> DNA

<213> Staphylococcus lugdunensis

<400> 220

25 gaagtggagc gtaatttgtc aaaacaacaa atacagcata ataattgatgc tactgggtgac 60
actcaagatg ataataatta taataatgaa atatcaaatac aggaagcaac aacgcagaac 120
30 aaacaaataa ctcaagtctga caatgtaaat agcagggcac aagcaataaa tgaaataagc 180
gacagccatc gtacagtaaa taaagccact gaagcactag acaataactc tacttttaaat 240
acatccaccg atgtatcacc tgcaacgaaa caagatacaa ctactagcaa tcaaacaact 300
35 caggaaaaca atgatgcaac aacacaaacc aaaacaaatt ataagcaaga tggtaataac 360
aacgtattat cccaagtgc aaccaatgac aatcagtcctt caaatcaacc acgtaacagt 420
cacctaaata catccacagt aacatacaac aataatcatc aagtaagaag attagcaaaa 480
40 gttgaagcaa caaatacaga taataacggt actcagactt cagacataatc gaataaactc 540
tcaaattgaa cagcgacaat tgaagcggca gatacgattt accacataa agcagaatat 600
gtaaatttaa attatcggtt ccaagcccca gatgatgttc aagcag 646

<210> 221

<211> 500

<212> DNA

<213> Staphylococcus lugdunensis

<400> 221

50 tgctcaggtat cgtagatgca attactaaag cagtacaagc aggttttagat aaagattggg 60
ctacaatggc tacaagcatt gctgatgcaa tcgctaaagg tgtagacttt atcgctggtt 120
55 tctttaacta aaatataaat tgagacttta acaataatcg taaaaaggag cgtttacaat 180

EP 1 770 171 A1

	atgtcaggta tcattgaagc aattactaaa gcagtacaag caggtttaga taaagattgg	240
5	gctacaatgg gcactagcat tgcagaagca cttgctaaag gcattgacgc aatttcaggc	300
	ttatttggtt aatctcaaata ataataaata atactatttta aaataaaaat atttttaaag	360
	gagcgaacat atcatggacg gaatttttga agcaatttct aaagcagtac aagcaggttt	420
10	agacaaagac tgggctacaa tgggtactag cattgcagaa gcacttgcta aagggtgtaga	480
	ctttattatt ggattattcc	500
15	<210> 222 <211> 500 <212> DNA <213> Staphylococcus saprophyticus	
20	<400> 222 gaaataaccg cattccaact aacacttttaa ttaatggaga aaagagaacc aaaccaatcg	60
	atgtgcctga aattttttaa gtcttaagct caatgattcg tagacgttta tatcattttg	120
	ctatacatcc aaatgaccaa gaagatttgt gtcaagatgt gctcgtaaga ttatactgtg	180
25	catttaaaaa atttgatttc actgatgaca cacctattga gcattatgta aatcgtgtga	240
	ttaaaaatgt aaaaaatgat tatatccgta aaaaatgcta tggcaaccaa cgacaagaaa	300
	tgctgggtcaa tgaatttata gtcaatgatc aaaatagtaa aacagaacac ccacttgata	360
30	aacatatatt agcttttagag ataggaagtc aattacaaca gggattaatg aaactgacgg	420
	tcttagaaaa aagtatcgta atctatttac taaatgactt taagccgaaa gaaattgctg	480
	aaacactaaa tatacaaatac	500
35	<210> 223 <211> 432 <212> DNA <213> Staphylococcus saprophyticus	
40	<400> 223 aagagaacca aaccaatcga tgtgcctgaa attttttaaag tcttaagctc aatgattcgt	60
	agacgtttat atcattttgc tatacatcca aatgaccaag aagatttggtg tcaagatgtg	120
45	ctcgtaagat tatactgtgc atttaaaaaa tttgatttca ctgatgacac acctattgag	180
	cattatgtaa atcgtgtgat taaaaatgta aaaaatgatt atatccgtaa aaaatgctat	240
	ggcaaccaac gacaagaaat gctgggtcaat gaatttatag tcaatgatca aaatagtaaa	300
50	acagaacacc cacttgataa acatatatta gcttttagaga taggaagtca attacaacag	360
	ggattaatga aactgacggc cttagaaaaa agtatcgtaa tctatttact aaatgacttt	420
	aagccgaaag aa	432
55	<210> 224	

EP 1 770 171 A1

<211> 200
 <212> DNA
 <213> Staphylococcus warneri

5 <400> 224
 aaaagatatg acataatggt acgaataggt aaactatccg gatcaaagt taactttaca 60
 cattcagcat aaccatcgta ttcaccattc aaattcgatg ttattccatt agcccttcca 120
 10 gcttcagttg atacgatacc tgggtatagtt ttaaaaaaag cttgaacgcc ccacaaacaa 180
 ccgccagcta catatactat 200

15 <210> 225
 <211> 515
 <212> DNA
 <213> Staphylococcus warneri

20 <400> 225
 catccaattt acagaaccat ctttttcatc tatgactgca ttattaatta taatgcttac 60
 taaattgtcg attgcatcgt caatattgtc tgaatttact atttcatatc cataatttat 120
 aaatccatta ccatcaataa ataatttatt ttgactttct aatgaaaatt ttattagttt 180
 25 acattgaaac aacaaatctt tcaaagaata tctttgcgtt ttttctaaaa atacattgag 240
 tgggtttttc aataagtgat gtaccgtatt atttttaata tcttttaccg aaacactttg 300
 gaccttagta taaaaatagg gtactgaaag agtttctatt tgttttattt ctgaatttat 360
 30 taacttatca ctttaataaat tttcaccgta ctcttctagt ttgttaaaca agctctttcg 420
 cttatttgca taaagaggtg atttagcagc ttgtattaat actgagtact caattgtact 480
 tcttggtaaa attctcactt ctacttctga tgaag 515

35 <210> 226
 <211> 320
 <212> DNA
 <213> Staphylococcus warneri

40 <400> 226
 tgtatcaact ccactttatt catattaatg acgacgcact tacactcaca aagtcaaagc 60
 aagacaccat tcaattatct ataggcaatt ggattaaccc atcagcccaa aaatctatta 120
 45 gcattcgaac tggcgttgat acgaatcaca atcaatatca aattcttcaa attgataccg 180
 aacatcaacg tattaactg acttctgaag aagatcttca actcatgtat attttagact 240
 acgaagatac aaaccatata ttcatacaaa catcagttaa gaattcgtat ggcacgtcaa 300
 50 gaccataag atacgaaaaa 320

55 <210> 227
 <211> 271
 <212> DNA
 <213> Staphylococcus warneri

EP 1 770 171 A1

<400> 227
 agcaagttct ttgttaattg caactttgac atcagcgaca ttaattaatc cggcacatgc 60
 5 agaaacgaca tcatcaaccg ataataacca acaaaccaca caatctcaac aaaaaagac 120
 accgaagatt gataaaggta ataacgtcaa acctgttgaa aagaaagaac gcgcaaattgt 180
 catactacct aacaatgacg gacatcaaat taatgataca acgttagggtc actatgctcc 240
 10 tggtactttc gttcaagttc aatcaaacga a 271

 <210> 228
 <211> 500
 <212> DNA
 15 <213> Staphylococcus warneri

 <400> 228
 tattgtcaaa gtcacaacaa ttagatatag aattaaaagc gatacttcaa caattcaatt 60
 20 cttttattat gagaagaatt aattatattt ctcaaatga ttttgaaaaa gacgaccttt 120
 atcaagaagt gtcatacaaa atatatctag cgcttgagcg ccatcatttt caatatgatg 180
 attcgtttat aaaatatata tcgcgggtca tcaaatcagt taaatgtgat tactatcgac 240
 25 ggcattacac tcaacagaag cgatatacga atgtagttaa tgatgctgtg gttgaatatc 300
 aaacgaacct gcttaataga gatcgagttg aaagagaaat attaacatgt gaagcaatca 360
 aactattgaa cgcggcgtgt gagaaattaa ctaaacaaga acgagaagta tttgaatttt 420
 30 atagtaaagg ttataaacca aaagaaatcg cacatttact aggtataaaa gacaaagtag 480
 ttacaatgc gatacaacgt 500

 <210> 229
 35 <211> 400
 <212> DNA
 <213> Staphylococcus warneri

 <400> 229
 40 tcagatatata acaatttaac aaggatgtta tcaactgtagc gggttggtac tatctaagat 60
 atgcattgag ttatcgtgat atatctgaaa tattaaggga acgtggtgta aacgttcac 120
 attcaacggt ctaccgttgg gttcaagaat atgctcccgt tttgtatcaa atttgaaga 180
 45 aaaaacataa aaaagcgtat tataagtggc gtgttgatga gacatatatc aaaattaaag 240
 gacagtgggtg ttatctgtat cgcgcgattg atgcagatgg acatacatta gatatttgg 300
 tgcgtaagca acgagataat cattcagcat atgogtttat caaacgtctc attaaacaat 360
 50 ttggtaaacc tcaaaaggta attacagatc aggcaccttc 400

 <210> 230
 <211> 758
 <212> DNA
 55 <213> Staphylococcus warneri

EP 1 770 171 A1

	<400> 230	
	taatcaaacg caacaacaac cttcagaacc aacaaaagcg aaagattctg atacaaataa	60
5	tacgaatggt gaacgtcctg aatcgaattc gacacaaaca tcaaatcaag aactgacaa	120
	aatgcaggat acatcaacta atcaaacaaa cgaaaattct aaacatatta ttgataaaac	180
	taatgacggt tcacatgaaa ctacaaagac aaatgataca gatcaaacgt catctcaaga	240
10	caattcagaa caatctcttg aagtcgactc aaatgaggca ccagcttcaa atgacaaatc	300
	aactccaacc aaacaagaac ctactaattc aaagcaagat attgatgaaa catctaaacc	360
	taatgaagat tcaaaacttg taccatcaaa gtcaaatata acatctaaag cagataaaca	420
15	agaacagtct tctaagaac ctggtgagga taatgctcaa aaagataaac atgtatcaca	480
	agaagattca tctttagaaa agcaaggtag acaagaggtc ccgcagactg acacacataa	540
	agatgtcaat gtaacacctt caaagtcctc atcagaacaa caactatcta caacacaaca	600
20	cattacagct aaagattcta gtgcttcaca agagggtgcca gttcattcac tagattcctc	660
	taaacaagat cacacaacat cgactgagag ccatatcaat ttagataacc tagataaaca	720
	agcgactaaa gatcgtagac ctacagataa tggcgatg	758
25		
	<210> 231	
	<211> 562	
	<212> DNA	
	<213> Candida albicans	
30	<400> 231	
	aaacgcattg ttaagagacc cagaaatcaa aactggtaaa gtgtctgttg cttcatactt	60
	gaagtttttg gattctgttc aattcaagag ttatggagac gaacctttgg aagtattggc	120
35	tattgtggta gaacaaaatg acaaaattcc taaattagac gagtttttgt catccaagac	180
	aggttggtta aacaatgtta ccgataatat ttccaatgct atcaagaaag attacagtca	240
	attatgttgg gttgttaatg aaaacgatgc caacttacct tgggtatttct ccaaatcaga	300
40	tggttcattt gccaagaatg gccaaatctt gttttggtac ggtttaaaca ttgacgaagc	360
	tagtaaattg attaaagaat ttgattcttc atctattgga tcatcgttgt catcttctaa	420
	agaatctggc gtattcacat ctgctcaaca aaagcgtggt ttocaccact ctacagtcgc	480
45	tagaaacacc aatcctaata ctccattatc tgaaggtaag caaaccgaga gaaaaaaagt	540
	tgctttgatt ggtgctagag gt	562
50		
	<210> 232	
	<211> 524	
	<212> DNA	
	<213> Candida albicans	
55	<400> 232	
	caggtaagtc aaagtctggt gagttatctt ctactgggtc tgtgacaact aatacagcaa	60

EP 1 770 171 A1

	caccagatgt tccatcaact aaagtacctt cgaatccagg ggcaccaggt actggtgttc	120
	caccaccttt agcaccatcg acagaaacac aaactaccaa taatgtacca ggctcaccaa	180
5	atatccctgc cactggaaca actgatatta ttagagaatc aactactgtt tcacacacag	240
	tgaccgggaa tggaaatact ggcgttccaa tgaatccaaa ccctgcgttg acaacaggca	300
	cttcaactgac tggcgcaacg aattctgcaa ctaaccatc tcataaaca ggtgttaata	360
10	caggatcagg aggtcaact aatattgtca ctccaccttc ttctgcaact gcgacagtgg	420
	ttattccagg aactgataat ggtgctacta ccaagggcca agatacagct ggtggcggca	480
	actctaattg atctactgct accaccaata tacaaggtgg caat	524
15		
	<210> 233	
	<211> 230	
	<212> DNA	
	<213> Candida albicans	
20		
	<400> 233	
	gattaatgac atcaaggggt tagttaaagg cattaaaggc aaaaacggga aatcctactc	60
	aagtgtccca gttgggactg ttgattcttg ggatgtctta gttgatggtg ccagtaaacc	120
25	agccatogat gctgcagatg ttgtctactc caactccttc tcatactggc aaaaaaacag	180
	tcaagctaata gcttcatact ctcttttcga tgatgttatg caagctttgc	230
30		
	<210> 234	
	<211> 632	
	<212> DNA	
	<213> Candida albicans	
	<400> 234	
35	tctggtgaag gtttaggaag aaagaaatca ttaattagac cagaaagatc aagaatggat	60
	gaaagccatc cacgattcca ttatactcaa gttgcaaata aagaatctaa tcataataaa	120
	gtacagccat cttcaactgg tgttgatcct cgtaaataca atgaattatc aacatcaaga	180
40	tcacatttga gtaattacgc tactccacca catcaagagg aagaagaaga cgaagggatc	240
	cctttaatgg atatacacia tgcttcaccc aatgttagca gtgacaaaaa taatgatcta	300
	aaaggtggac gtgaagttaa tggattaaat gatgaaatca acgattatgg tagttcaccc	360
45	aagaaaaacc aagtcatttc atcttcaaga ccaatgaaca acgaaaaacc agctaaacct	420
	aaacatgata tatatttctg gaaagtttat tgttatgcta ttacattttg ggcaccagct	480
	ccattattga aattatttgg attaccaaca aaagatcgtc aattcgcttg gagagaaaaa	540
50	ataggggtga tttcttgtat tctttacgtt ggggcatttg ttgcttattt gacttttggg	600
	ttcactaaaa ctgtttgttc gagtcaagtg gt	632
55		
	<210> 235	
	<211> 633	

EP 1 770 171 A1

<212> DNA
<213> Candida albicans

<400> 235
5 caccaaaactc aggcttattc aaacaaggat actcctcctt ctccaatgcc gacggagcca 60
ttatcagaaa tgttgaagca gttcgtgaaa tcgcctctat ctactcacc tccatgggtc 120
caagtggaag aaacaagatc atcgtcaaca agttgggcaa aaaattcatc accaacgatg 180
10 ccgccaccat gcttaacgaa ttggaaattg tccaccccggt agtgaaaatc ttgatccagg 240
catcaaagca gcaggaattc gaaatgggag acaacactaa cctagtaatc atccttgctg 300
gcgagttcct caacgttgct gaaaaattgt taacattggg cttgaatgtc agtgaaatca 360
15 tccagggggt caacttggca aacaagtttg tgatgaaaac attggacgag ttggtcgttg 420
aaaaagtcga gtcgttcgaa actgacctat taaaagcagt gaagccagtg atcgccgcta 480
aacagtaagg cgtagaagat accatcgcca aactcgctgt tgatgccgtt gccctagtta 540
20 tgaagaacgg gtctttcaat gtcgacaaca taagagtggg caaggatcatg ggtgcatcgc 600
tctcccaatc gcaagtgggc aagggtatgg tct 633

25 <210> 236
<211> 465
<212> DNA
<213> Candida albicans

<400> 236
30 gaatgcaaag aaacattgaa atcaagagta ttttgatcca attgaccatg tatgctaagc 60
ttaacgaaaag ggtcgactat ttgttgaaa agttaacatc cactgaatta ttggatagtg 120
aaaaagtcac gtcaaagttg aattcagaat ttgatcctca agaaaaattc gattatgata 180
35 aattgattaa agacaagggt ctgaccttga gaaaaggatt gaaagatttg aaattcgata 240
gagaagagat tgaaaatact ccttgctata atgaaatgat tgaagatttg tttgttcaaa 300
tcaaggatga tcatccagag acaaaaaccg atggcgacaa attgattgaa tacttaaaag 360
40 aacatagaaa caggatcgac gatgttttgt ctaaacagac tataaaattg gatgatttat 420
tgtaccagaa agctcaattg atagtaagtg atgatttgca tacgg 465

45 <210> 237
<211> 504
<212> DNA
<213> Candida albicans

<400> 237
50 tgtctgctgc tagtgaatcc aaatattcta ctgaagtgtt ttccgaatta ttgagcaaatt 60
tacaagttgc tgataataag gatgaagctg cttccaacat ttccactttt ttaaactcat 120
ctattgttga acacgatgtt ccagttgaat ttttcgaaga tttgaaaaaa caaattcaat 180
55 ctaaagatgc taaagtttct cttgctgctt tggatgctta caaacacatt gcttcaacca 240

EP 1 770 171 A1

	acggtttatc cccatccgtt gaaccatatg ttgttgactt ggtagtgaa gttgccgta	300
5	aagctgggtga caaaaacaag gatgttcaaa ctgctgcttc tgatgcttta ttggccattg	360
	cttctgccat caccccaact gctgtcaaag ccattctacc aaaattgatt gacaacttga	420
	ccaacaccaa caaatggact gaaaaagttg ccattctgag agctgtttct caattgggtg	480
10	acactgctaa agctcaaatt gctt	504
	<210> 238	
	<211> 526	
	<212> DNA	
15	<213> Candida albicans	
	<400> 238	
	tgacagggtc attggtgtct tacaaaagtc ttggtaaaaa aggtggattt tggattttca	60
20	cattattcaa ttatctctgt atcgggtgtt tgacatcttt gttcattgtc tccattggta	120
	atagaccaca tgcatacaag aatatcttca aaacattaat catattgtta accatatgtg	180
	cattatacgc attggtggtt ggatttctgt ttgttatcaa tactattgct acttttggaa	240
25	ccgttggaa atctacctat gtgctcgta gtattgtggt ttcattgttg tccacctatg	300
	gtctttatac gttaatgtcc attttgtact tggacctatg gcacatgttg acttgttctg	360
	tacaatactt ttgatgatt ccacgtaca ctgtacatt acaaatattt gcattttgta	420
30	atactcacga tgtctcgtgg ggtacaaaag gtgacaacaa tccaaaagaa gatttgagta	480
	atcagtacat tattgagaaa aatgccagtg gagaatttga ggctgt	526
	<210> 239	
35	<211> 621	
	<212> DNA	
	<213> Candida albicans	
	<400> 239	
40	tcagatgggtg atgaactgtc gattgaattt cttaaccaa gaagcaacac tccattaaca	60
	caaggaactt ataattatca taatacttct actaattcac ttaatttcca acaaccagaa	120
	ccaatttata gtaatacaac tcgtacatct ttaagtgtt ctattatga tcatccata	180
45	tttgacactt ctcaaacaca gatccaacct ccacatgata atccattcac tgaaagttat	240
	gaaatgacag atacttcata tcaaggtaat gatcatcatt atcgtactgg tcaacctaat	300
	catctcatga accccactta taaccaagct ttcattcctc atgtttatga tgaagaagat	360
50	aatgatgaac aagaatatga tcaacgtatt cagtataatc aatttcaagg ggatcatttt	420
	gatttggcag cgattagtta tgctgatgat gaaagtcaaa gtcagttgga ctatgtcccc	480
	actgaacgtg tcatacctga aggagaggaa gaagaagagg aagggtgagac gagttttgaa	540
55	aaagaacctg gtagtgaaac ctttctggc ccatttggag aagaacgatc atttgaagaa	600

EP 1 770 171 A1

	cctcctccac aacaagaagt c	621
5	<210> 240 <211> 607 <212> DNA <213> Candida albicans	
10	<400> 240 aactagggct gctaattgtt ccaactgaatt aactgctgct gcaccttatg aattgggtaa	60
	attatattat aatggatttg aagatattgt cttgattgat aaaaaatatg gattagaatt	120
	atttgcctca gcagcagcat taggtcattt acaatcagcc gccatttttg gtcattcatta	180
15	tgaaattgga gaaattgttc ctcaagattc taatttatca attcattatt atactcaagc	240
	agcattagga ggtgatccaa attcaatggt ggcaatgtgt gcttggtatt tagttggtag	300
	tgaaccatat ttacctaaag atgataatga agcatttgaa tgggctaaac gtgctgccaa	360
20	ttgtaattta ccaaagctc aatttgcttt agcaaatttt tatgaaaaag ggattggatg	420
	tattaaaaat attaatgaag ctcaatcatg gtataaaaaa gctgctgaaa atgggtgatga	480
	aaaatctttg aaacgattaa ctgataaaga attgggttaa accattcaaa aacaatggaa	540
25	aaagaaacct ccagtaattc ataatagaaga tggaaacttct acaactaatt caggatctct	600
	tgctcaa	607
30	<210> 241 <211> 693 <212> DNA <213> Candida albicans	
35	<400> 241 agtcagagca gggccaatca tcaaaatcag atgtgatcaa gatttcgata gtgaaaaaga	60
	agaggcagag aaatttacca aaattcagga tgagatttta caaacatttg ctacaaattt	120
	gccacaacca ccaaatttga aaatcaagaa cgttactcaa acctcgtgtg ttttagaatg	180
40	ggataaacta aacttgggca ccgccacatt gaaaaatctt attttattca aagatggtaa	240
	aaaattaggc tcaattcctc agccattaaa taatogaacc tcaaaattgt ctggattgcc	300
	aattgacaaa tcttttaaag tacaattacg tttggatacc actgctggta ctttcttgtc	360
45	gaatgaaatt gaggtaacaa cccacaaaat gactgatttg tcaggaatta ctgtgtgtct	420
	tggtgacctt acacctaatg atcaattcaa caaggaggac attgaagagg cattaaagaa	480
	tatgggggca aaatatccag tgcaacaaca agtcaaagtc gacactacac atttcctctg	540
50	tactagagaa aacaaacaaa atcctgaata tgtgaaggca aatgatatga acattccaat	600
	aattagacca gagtggttga aagcctgtga gagagaaaga agaatagttg gtgttagaga	660
55	cttttatgtg aaagattgtg tcttaccoga cat	693

EP 1 770 171 A1

<210> 242
 <211> 511
 <212> DNA
 <213> Candida albicans

5

<400> 242
 gtcaacaaca aggcaagaca attttacttt cacttggagg agccacgggc aattacgggt 60
 tttcttccga ctcaagaca gttcaatttg caggaacatt atggaataaa tttggagggtg 120
 10 ggaaagactc agaaagacct ttgtacgatg caattgttga tgggtttgat tttgatattg 180
 aaaataaaga ccagacagggt tatgctgctt tagcgactca attaagaaaa tatttttagca 240
 ctggaactaa atcttattac ttgtcagctg ctccacaatg ccataacct gatgagtcgg 300
 15 ttggtgactt aatgtcccaa gttgatttag attttgcatt tatacaattt tataacaact 360
 actgttcgct caatcagcaa ttcaactgga actcatggag caactatgcc agaggtaaaa 420
 gtattaaact ttatttgggc ctctctggct catcatcgtc tgcctggctcc ggatttgttg 480
 20 gtttgtcgac tgttcaaaga gtcgtggcta g 511

<210> 243
 <211> 510
 <212> DNA
 <213> Candida albicans

25

<400> 243
 ctgtcaagaa actgacgttg acattgtttt attgtcattc ttgaatttgt ttccagatcc 60
 30 attgaacggt aattttgcca accaatgttg taacactttt gaactctggt tgttacctg 120
 ttctcaaatt ggtgctgaca tcaaaacttg tcaatcttta ggtaaaaccg tgttgttacc 180
 tttagggtggg ggtgttggtg actatgggtt cagcgatggt gcttctgcca ctaaattcgc 240
 35 agacaccttg tgaacaaaat tcggtgctgg tgaagatcca gaaagaccat ttgatgacgc 300
 tgttgttgat ggtttcgatt ttgacattga acacgggtgg gctactgggt acctgaatt 360
 ggctactgcc ttaagaggca agttcgccaa agacacttcc aaaaactatt tcttatctgc 420
 40 tgctccacaa tgtccatacc ctgatgcac tcttgggtgat ttattatcca aagtccact 480
 tgattttgca ttcatacaat tctacaacaa 510

45

<210> 244
 <211> 577
 <212> DNA
 <213> Candida albicans

50

<400> 244
 ttggctcgat taagaaataa attaaattca aaatatatta tcacggtagc ggctcctggg 60
 ggtagtgata atattgaaat ttgaagatt caagaaatgg ataaatattt gacattttgg 120
 aatttaattg gttatgattt tgctggtgaa ggctggtctt cgaaaactgc tttccattct 180
 55 aatttatttg gtaataatgg ggataattca ttgaatgcat ctgatgttgt ccaaacttat 240

EP 1 770 171 A1

	attaacaagg gagttcatcc aacaaaattg atattaggga tgccaatgta tggaagaata	300
5	tttcatggtg ttgatcgacc agaaattggg attcctttta caaaagagag aaaatcaggt	360
	tgtatagaag ctgatgttgt ggactataac aaatttgggtg atacattcga ttatgaagat	420
	tttgatccac gcaaagtggg tgcattgaaa tatgattccc atagtaagca attaattaca	480
10	tttgataatc ccagtggtgc tagaataaaa gctagctttg tacaactgag acaattgggt	540
	ggtgggatgt ggtgggattc tgctggtgat gtttcag	577
15	<210> 245 <211> 909 <212> DNA <213> Candida albicans	
20	<400> 245 gctccatcta gcaactcacc tgggtgttcca gctgogccat ctaacaattc atctggtgct	60
	tcagttgttc catcacaaac agccaacaat tcatctgctt cagctgctcc atctaacaac	120
	tcatctagtg ctatttcttg aagtgttgca ccatcaagct acggaaactc taccattgca	180
25	caaccatcta cttctacaaa atccgatgct gcatcaatta ctggtccaat tactacagac	240
	aaggttataa ccaatgagtc tggcattgtc ttacatcta cagtaatcat tacacatgtt	300
	tctgaatatt gtgaccagac ttctgctgct gctgttcaat catcagcatg tgaagaacag	360
30	tcaagtgcta aatcagaaca agcttctgct tcatcagaac aagttaaggt cattactagt	420
	gtggtttggg gtgagtcacc tattcaatct attgaatctg tcaaaacaag tgcagaagct	480
	gctcataaga ctgagggttat tgctagttgt gcaagtgaat taagctcttt gagttctgct	540
35	aaatctgaag ctatgaagac tgtttctagt ttagttgaag ttcaaaaatc tgcagttgcc	600
	aaacaaacct cgttggtgct tgtacaatca tctgctgctt ctgtacaatt aagtgctgct	660
	cacgccc aaa agtcgtctga ggcagttgaa gttgccc aaa ctgctgttgc tgaagcttct	720
40	aaagctggtg atgaaatttc gactgaaatt gttaacatca ccaagacagt ttcttctggt	780
	aaggagactg gtgtttccca agctactgtt gctgctaaca cacattcagt tgcattgct	840
	aatatggcaa ataccaagtt tgccagcaca atgtcggtgt tggctgctag ttctggtgtt	900
45	gttgggtctc	909
50	<210> 246 <211> 537 <212> DNA <213> Candida albicans	
55	<400> 246 gacactccgt cagattcaac tccaactaaa aaaccagaac cgactataag tccagagttt	60
	agaaaacca gcataagtct gttaacttct ccaagtgttg cacataaacc tccgccacta	120

EP 1 770 171 A1

	ccaccgtcac tgagtctggt tggaagtagt gagcattcga gtgcaagatc gtccccggct	180
	atcacgaaga gaaactcgat tgcaaacatt atcgatgctt atgaagaacc agctactaaa	240
5	actgaaaaaa aggctgagct aaactcacca aagataaacc aactgacacc ggtgccaaaag	300
	cttgaggaac acgagaatga taaaaacaaa gtagaaaagg ttgtggatag tgcacctgaa	360
	ccaaaaccaa aaaaggagcc tcaaccagtt tttgacgacc aagacgatga cttgacaaaa	420
10	atcaaaaagc tcaagcaatc taagaaacca cgtcggtatg aaacacctcc aatttggggc	480
	cagaggtggg ttccccaaa tagacagaag gaggaaacta atgttgatga cgggaat	537
15	<210> 247 <211> 561 <212> DNA <213> Candida albicans	
20	<400> 247 acatagtcag ccacaaccac aaccacaagc aacacaacca agatcaaata gaagtagact	60
	gcaaacgagc ttttctaaac caagaggtag caggcaagtt agtggcagtg gcagggtcaac	120
	cggggccaag aaacaatcag caatcacact gggcagttact ggtactggcc ctgcccgaaa	180
25	tgctgataca ggtatgacat cagttgctaa tagcacttcc acaaccacta tgacaaccac	240
	caacaataac aacaaattgt ctgtttcagc cccagtaaatt gtgatatatg ctaatcttcc	300
	tgagagactt caacaggtgt taccagcacc gccggtatca cgtgctccag taagacctga	360
30	tgtaacggtc aatttgacat caaaacgagc caaaagaaaa tcaaaattca ctccggaaca	420
	agatgacatg atcgtgaatt tgaagaaaaa ggggaaatca tgggttgaaa ttgccgaaat	480
	cactggtggt ggatcatatt tagcggcacg gaatcgattt caagttattg ttggacagca	540
35	aggaaataac aattcgagtg c	561
40	<210> 248 <211> 351 <212> DNA <213> Candida albicans	
45	<400> 248 tcaagaaagc tactgatggt ggtccacacg gtgctatcaa tgtctctgtt tctgaaaaag	60
	ccattgacca atctgttgaa tatgttagac cattaggtaa agttgttttg gttgggttac	120
	cagctcacgc taaagtcact gctccagttt tcgatgctgt tgtcaaatac attgaaatca	180
	aaggttctta cgttggtaac agaaaagaca ctgctgaagc tattgacttc ttctccagag	240
50	gtttaatcaa atgtccaatc aagattgtcg gtttatctga cttgccagaa gtcttcaaat	300
	tgatggaaga aggtaaaatc ttgggtagat acgtcttgga caccagtaaa t	351
55	<210> 249 <211> 707	

EP 1 770 171 A1

<212> DNA
<213> Candida albicans

<400> 249

5 ctacgtcctt tgctacaacc actacagtta ctgctcctcc aggtggtacc gatactgtga 60
ttatcagaga gccaccaaac catactgtca ctactactga atattggtca caatcctttg 120
ctactactac tactgttact gctcctccag gtggtactga ctacagtaatt atcagagAAC 180
10 caccAAATcc aactgtcact acaaccgagt attggtctca atcctttgct actactacta 240
cagttactgc tctccaggt ggtactgact cagtaattat cagagAACct ccaaacccaa 300
ctgtcaccac cactgaatat tgggtccaat cttacgcaac cacaactact gtgactgctc 360
15 ctccaggagg cactgactca gtaattatca gagaaccacc aaaccacact gtcactacta 420
ctgaatactg gtcacaatca tatgccacca ctaccactgt aactgcacca ccagggtgta 480
ctgacactgt tatcattaga gagccaccaa accacactgt cactactact gagtattggt 540
20 ctcaatcggt tgctactacc acaactgtaa ctgggtccacc aagtggcact gatactgtta 600
tcattaggga accaccaaac ccaactgtca ccactactga atactggtct caatcatatg 660
caaccactac taccattacc gctccacctg gtgaaactga taccgtt 707

<210> 250
<211> 586
<212> DNA
<213> Candida albicans

30 <400> 250
aacggtcata tccaaagaag ttactggtgt tttcaaccaa tccaattcat tgatatggtc 60
ttacacatac agagctcgat acgaagaaat atctactctt accgctaattg ctcaattgga 120
35 atgggctttg gatggtacta ttgccagtc cgggtgataca tttacattag tcatgccctg 180
tgtatataaa ttcattgacgt acgaaacctc agtgcaatta actgccaaact ctattgcata 240
tgccacatgt gactttgatg ctggtgaaga cactaaaagt ttttcaagtt tgaagtgtac 300
40 ggtgactgat gagttgacag aagataccag cgtttttgga agtggtatgt tgccatttgc 360
tttcaatggt ggaggttccg gatctaaatc tacgataaca gactccaaat gtttttcaag 420
tggttacaac actgtcacgt tttttgacgg aaacaatcaa ctttctacaa ctgcaaattt 480
45 tcttccccga agagaactag cgtttggtct agttgttagt caaagacttt ccatgtcgct 540
cgatacaatg actaattttg ttatgtctac acctgtttc atgggt 586

<210> 251
<211> 692
<212> DNA
<213> Candida albicans

55 <400> 251
aacattagaa acggaacagg ccgtcctcgt aagactccca gatccaagct ctatatggtt 60

EP 1 770 171 A1

	tacccccac tttcaggtga ggactcaaca aatcctgaac cagaagagg tagttcacag	120
5	gaaaacaatc ccacagaacc tagttcctca caatcaaatt cagtacaaa tcaagaccaa	180
	agtgaagacc agagtcaact accacaacaa gaactgaata cacaacaaga gctgaatata	240
	caacaagaac tgaatacgcc atcaccaggg gcgtcaaaca catcaactga aactcctgct	300
10	cctttaagtc ccatacaacc aggaattcga aatattcctc tgggattatt attaccacaa	360
	gaaaaagttg gccgtcttat gggatatcca ttttaccgag attttaattt taccctaaat	420
	ccagagagat atcagaaact tatttatgtg ttccagatac ttaaaaatgc tgctcgtaat	480
15	cacagaaatg gagcttctct acttagaaag tatttctctgt tagcgagaag gtctaaaaga	540
	acaacagaca tgtttgtaac caccatagag gaaatgcgga agaggctgtt ggaaaatagt	600
	cgtaagagag agctcgagga agcgcaagaa agggaagagt caaataaaaag acaacataca	660
20	gaatcaagtg cagaaccaa tgcagaactg ag	692
	<210> 252	
	<211> 506	
25	<212> DNA	
	<213> Candida albicans	
	<400> 252	
	caaagttcca ccatttcaac tccagtagac tcattaccta caagtggaag aagtactcct	60
30	aatccgaatg catcaaccac ttcattaaca tcattgaata ctgctcttgc taaattaaat	120
	gtttccaata ttccatttga agaaaatttg agtaatatg agaaagccgg taagatagct	180
	gagattagac ccgaagtgga aaccattgtt aagataattg atgaacaaga agatttatgc	240
35	attattaatg aatggaaatt gaatgaaatt ttgaaatctt tattgaaacc taaaagtcct	300
	gcattagtta aagaaggagc tttattaatc attcaacaat tggcaactaa atttggtggt	360
	caaaccocca aagaagctta tttattacag tttttaagta ctgcttatga tatgtttact	420
40	gataaagata aaaatgttgt taaagctgct aaatctgcta ctgatgcatt atttggaatt	480
	taccctgtgg aagcattagg atcaat	506
45	<210> 253	
	<211> 520	
	<212> DNA	
	<213> Candida albicans	
	<400> 253	
50	atcgacatca acaggettac cacctaattg gacgattaga gtatccagat ccataacaa	60
	agagtatttc ttaaaccaat ctaccaatga gtcgtcttgg gaccacactt atggcactga	120
	caaagaagta ttgaatgcat acattgcgaa gtttaaaaac aatggttaca agccacttgt	180
55	gaatgaggat ggccagggtta gagtttctca tttgttgatc aagaacaatc aatcaagaaa	240

EP 1 770 171 A1

	acccaagtct tgggaagtccc cagatggtat aagtagaact agagacgaat ctatacagat	300
	attgaagaaa catttggaag gaatattgag tgggtgagggtt aaactaagtg aattggcaaa	360
5	taccgaaagt gattgcagct cacatgacag aggtggtgat ttaggggtttt ttagcaaagg	420
	acaaatgcaa ccaccattcg aagaagccgc attcaatttg catggttgag aagtcagtaa	480
	cataattgaa accaatagtg gtgtccatat cctccaaaga	520
10		
	<210> 254	
	<211> 507	
	<212> DNA	
	<213> Candida albicans	
15		
	<400> 254	
	caatagcaca ggcacaatct ggaactggta aaactgctac tttttctatt ggtatgcttg	60
	aggttataga tactaaatca aaagagtgtc aagcacttat cttgtctcct actagagagt	120
20	tggcaattca aatacaaaat gtggtcatgc atttaggaga ttatatgaac attcacaccc	180
	atgcctgtat tgggtgggaaa aatgtcgggtg aggatgttaa gaaattgcag caagggcaac	240
	aaatagttag tgggacacca ggtagagtga ttgatgtgat aaaaagaaga aatctacaaa	300
25	ctagaaatat caaggttctt atttttagatg aagctgatga actttttaca aaagggttta	360
	aagaacagat ctacgaaatc tacaacatt taccaccttc ggttcaagta gtagttgtta	420
	gtgccacttt gccacgtgaa gtattggaga tgacaagtaa gtttaccact gatccagtga	480
30	aaatcttggg gaagagggat gagattt	507
	<210> 255	
	<211> 535	
35	<212> DNA	
	<213> Candida albicans	
	<400> 255	
	ttcattcaaa ccagccttac cacaagataa actcacgggt gtagatgata tccctgatag	60
40	agaacttacc gatattgaaa gaatcaacat caatgctgcc aattccaatt tacaagaaa	120
	attgaaaaca agacatttac aaatgatgc tattggatca totataggaa ccggtctttt	180
	cgttggtact ggtggtgcat taagtactgg tggaccagct gccattgttc tagcatgggc	240
45	cataagtgct atatcggtat ttatgacaat gcaaggatta ggtgaattgg ccggtgcatt	300
	cccagtttct ggtggattca atttatacgc aagtaaattt ttagaaccag gtattggatt	360
	tgctgttggg tgggaattatt tcttacaatt ctttgtatta ttgccattag aattagttgc	420
50	tgggtgctata actatcaaat attggaatgc tagtataaat tctgatgtgt ttgttattat	480
	atlttggttt gtggtgcttg tgatcaccat gttgggtgta agatgggatg gtgaa	535
55		
	<210> 256	
	<211> 433	

EP 1 770 171 A1

<212> DNA
<213> Candida albicans

<400> 256

5	cacaagggtta tacattcaga aaactaaaac ttactgatta tgataatcaa tatttagaaa	60
	ctttaaaggt tttgacgaca gttggtgaaa tttocaaaga agatttcact gaattgtata	120
	atcattgggtc ttcatcgcca tctattttatc atccatatgt aatcaccaat gcatcaggta	180
10	tagtggtagc cacgggggatg ttattttgtgg agaaaaaatt gattcatgaa tgtggtaaag	240
	ttggtcatat tgaagatatt tcagttgcta aatctgaaca aggtaaaaaa ttgggatatt	300
	atttagtcac ttcattaacc aaagttgctc aagagaatga ttgttacaaa gtcatttttag	360
15	attgttctcc tgaaaatgtt ggcttttatg aaaaatgtgg ttataaagat ggtgggtgtg	420
	aaatgggtatg tag	433

<210> 257
<211> 540
<212> DNA
<213> Candida albicans

<400> 257

25	aaaccataaa tcaacaacca cttgcttcgt caagatgggc tgcttggtgcc attgggtggtg	60
	ttcttgcttc atttattcaa attcttgcca cacttttcga atggattttc gtgcctagag	120
	aatggggccgg tgcacaacat ttgagtcgtc gtatgctatt tttggtgtta attttcttac	180
30	tcaatttgggt tccaccagtt tatacattcc aaattaccaa attggtgatt tattcgaaat	240
	cggcatatgc tgtgtcgatt gttggatttt tcattgctgt ggccacttta gtattctttg	300
	ccgtcatgcc attgggtggt ttattcactt catacatgaa caagagatca agaagatata	360
35	ttgcatcaca aacattttact gccaaactaca ttaaattgaa aggttttagat atgtggatgt	420
	cttatttgtt atggtttttg gttttccttg ccaaattggt tgaatcttat ttcttctcga	480
40	ctttgtcttt aagagatcct attagaaact tgtcgacat gacaatgaga tgtgttggtg	540

<210> 258
<211> 574
<212> DNA
<213> Candida albicans

<400> 258

45	tattatggcg attccacaga gttgatattg gtgatatcac aaatatggaa cagcattatc	60
	atttccatgt acaggagagca tgttctctcg gttgaacaag tttgcaagtt gatttatcaa	120
50	cgaggagctg atgaaaacac tatacgacca ccactatttt ttgtttacga agatgataac	180
	aaattttatg attttattaa aatcgaaaag gaatgggaaa gaaggatcac attttttgct	240
	caatcgttat caagcccttt accagaacca ttccagtag tttctacacc aacatttacc	300
55	gttttgattc ctcatctc agaaaaata ctattaagtt tacaagattt aattaaagaa	360

EP 1 770 171 A1

	caaagctttt caaaactaac gttgctagat tatttgaaac aacttcattc gaaagaatgg	420
5	gattcatttg ttcaagatag taagatgac caaactataa aggaaatgga tgaagacaag	480
	tttgtacgcg aaaatatgga tgatttgccg tactactgta tcgggttcaa agattcttca	540
	ccagaaaatg ttttacgaac aagaatttgg gctg	574
10	<210> 259 <211> 506 <212> DNA <213> Candida albicans	
15	<400> 259 cgtttggtat ttgctgttcc taaaaagggc agattatacg aaaaatgctg taacttattg	60
	agtgggtgccc atatacagtt tagaagatct aatagattag atatagcact ttctacaaac	120
20	ttgccaatg cattaatctt cttgcctgca gctgatatcc cagttttcgt tggagaaggt	180
	aattgtgact tgggtataac tgggttagac caaatcaaag aagctgaaca attcgacaac	240
	atcgaggact tgttggtatt gaaatttggc tcatgcaaat tgcagatcca agttccagca	300
25	gatggcgagt acgaaaagcc agaacagctt gttggaaaga aaattgtgtc ttcatttaca	360
	aaattgagta ccgactatct caaacaattg tcagacaaac ctactaatat cagatatgtc	420
	ggtggttccc ttgaggcttc ttgtgccttg ggtgttgctg atgctattgt cgatttggtt	480
30	gaaagtgggtg aaactatgaa agcagc	506
35	<210> 260 <211> 539 <212> DNA <213> Candida albicans	
40	<400> 260 agctaaatcc aaagacgatg acgcacggc atatgtcggg gtcgggtcca tcgctgctgg	60
	tggccgttac gacaatttag tgggtatgtt ctccaacggg aaatccatcc cttgtgttgg	120
	tgtatcggtt ggtgttgaga gattattctc catcatcaag aaccgtgcc atctcaacaa	180
	catctccgcc aaccacactg acgtgtttgt tatggcattt ggccggcggc aaggctggaa	240
45	cgggttctta aaagaaagaa tggaaatcac caacaagtta tggaaagctg ggatcaacgc	300
	cgagtacttg tacaaatcca aagccaacat tcgtaaacia ttgatgccg ccgaaaaggc	360
	cggcgccaaa ttagctgtca ttcttggtta agaagagtac ccacaaggcc aattacgaat	420
50	caaagtgttg ggccaggag aggaaaacga aggtgagttg gtcaccaaag atgaactact	480
	tgctgctgtc caggccaagc tcagctctga catcgacgac atttctcgca taatcaagg	539
55	<210> 261 <211> 1030 <212> DNA	

EP 1 770 171 A1

<213> Candida albicans

<400> 261

5	gctaccactc caaacacttc tgttccaaca acttcttcag aatcaactac tccagctact	60
	agcccagaaa gttctgttcc agttacttct ggatcatcta ttttagctac cacttcagaa	120
	tcatcatctg ctccagctac tactccaaat acatctgttc caaccactac tactgaaacc	180
10	aaatcatcaa gtactccatt aactactact actgaacatg atacaactgt tgtcactgtt	240
	acttcatgtt ctaacagtgt ttgtaccgaa agtgaagtta ctactgggtg tattgtcatc	300
	acatctaaag atactattta caccacttac tgtocattga ctgaaactac tccagtttct	360
15	actgctccag ccaactgaaac accaactggg acagtatcca cttctactga acaatcaact	420
	actgttatta ctgttacttc atgttctgaa agctcttgta ccgaatctga agttactact	480
	gggtgtgttg ttgttacttc tgaggaaact gtctacacta cattctgtcc attgactgaa	540
20	aacactccag gtactgattc aactccagaa gcttccattc cacctatgga aacaattcct	600
	gctgggtcag aatcatccat gcctgccggg gaaacctctc cagctgttcc aaaatcagat	660
	gttccagcta ctgaatcagc tccagttcct gaaatgactc cagctgggtc acaaccatct	720
25	attcctgccg gtgaaacctc tccagctgtt ccaaaatcag atgttccagc tactgaatct	780
	gctcctgctc ctgaaatgac tccagctggg actgaaacta aaccagctgc tccaaaatca	840
	tcagctcctg ccaactgaacc ttccccagtt gctccaggta ctgaatccgc accagctggg	900
30	ccaggtgctt cttcttctcc aaaatcttct gttttggcta gtgaaacctc accaattgct	960
	ccaggtgctg aaaccgctcc agctggctca agtgggtgcta ttactattcc ggaatctagt	1020
35	gctgtcgtct	1030

<210> 262

<211> 528

<212> DNA

<213> Candida albicans

40	<400> 262	
	ttgggtgggtt agaagttgag aaaggtgctt ctttatttat taagctggac aatgggtcctg	60
	tcttagctct taatgtcgct ttatcaactt tagttagacc agttataaat aatgggtgta	120
45	tttcattaaa ttctaaatct tctacaagtt tttcaaattt tgacattggg ggatcttcat	180
	tcactaataa tgggtgaaatt tatcttgatt cttcgggtct tgttaaaagt acagcctatc	240
	tttatgcacg tgaatggact aataatgggt taattgttgc ttatcaaaat caaaaagctg	300
50	ctggtaatat tgcttttggg actgcttata aaaccatcac taataatggc caaatttgtt	360
	tgcgcatca agactttgtt ccagctacaa aatcaaagg tactgggtgt gttactgctg	420
	atgaagacac atggattaaa cttggtaata ctattttatc agttgaacct actcataatt	480
55	tttacttgaa agatagtaaa tcgtctttga ttgttcatgc tgtttcaa	528

EP 1 770 171 A1

5 <210> 263
 <211> 528
 <212> DNA
 <213> Candida albicans

10 <400> 263
 caagagaaag ggaagaaga gaaaaggac acagcctttc aaacatcttt tgatagaaat 60
 tttgatcttg ataattcaat cgatatacaa caaacaattc aacatcagca acaacagcca 120
 caacaacaac aacaactctc acaaacggac aataatttaa ttgatgaatt ttottttcaa 180
 acaccgatga cttcgacttt agacctaac aagcaaaatc caactgtgga caaagtgaat 240
 15 gaaaatcatg caccaactta tataaatacc tcccccaaca aatcaataat gaaaaaggca 300
 actcctaaag cgtcacctaa aaaagttgca tttactgtaa ctaatccga aattcatcat 360
 tatccagata atagagtcga ggaagaagat caaagtcaac aaaaagaaga ttcagttgag 420
 20 ccacccttaa tacaacatca atggaaagat ccttctcaat tcaattattc tgatgaagat 480
 acaaatgctt cagttccacc aacaccacca ctccatcga cgaaacct 528

25 <210> 264
 <211> 360
 <212> DNA
 <213> Candida albicans

30 <400> 264
 cgtaactca gtcataact acatctttatt cctttttgca tcaacaatcc ttgcggcaga 60
 taaaacgtcc agttcagtat cacctacttt agtatgggtc acagggtactg atgccaatgg 120
 gaaattagcc accaccaat caacatatta tcaaagcttt atgagtactt ataccacagc 180
 35 tgaaacccca tcgtctggtt ctattggatt ggggtcaatc agtggaacag taggagaaat 240
 cagaacttat agtatgacta ctatatcaca aggtaatggg gggttatcaa aattcaatca 300
 aaatgggttta gaaatgaaga atttgtcatt tgttaaatta attgggggtt cttttattgc 360
 40

45 <210> 265
 <211> 701
 <212> DNA
 <213> Candida albicans

50 <400> 265
 gatccagatg ctgtaaccac agccaatgga acattaaatt tacgtatgga tgcttataaa 60
 aatcataatt tattctatcg ttcaggaatg gtacaaagtt ggaatcaatt gtgttatact 120
 caagggtcatt tagaaattct ggctcgttta ccaaattatg gtaatgtaac aggggttatgg 180
 cctgggttat ggtctatggg gaatttaggt agaccagggt atttgggatc tactgatggg 240
 gtatggccat attcttacga ttcattgtgat gccgggtatta cacctaatac atcttctcct 300
 55 gatgggattt cttatttacc aggtcaaaga ttaaataaat gtacatgtcc aggtgaatta 360

EP 1 770 171 A1

	catcctaatac gaggtggttg tagaggtgcc cctgaaattg atgttattga aggtgaagtg	420
5	atgactgata gtagtggttaa aaaagaaaat tgtggtggtg cctctcaatc cttacaattg	480
	gcccctatgg atatttggtg tattcctgat tataattggg tggaaatcta caatttttca	540
	gtttcaacga tgaatactta tactggtgga ccattccaac aagcattatc agcaacaacc	600
10	atgttgaatg ttacatggta tgaatttggg gataatgccc ataatttcca aacttatggg	660
	tatgaatatt taaatgaccc tgaacgggt tatttacgat g	701
15	<210> 266 <211> 794 <212> DNA <213> Candida albicans	
20	<400> 266 taatttccct tgttgtttcc ataataagat gtgttgttgc agatgttgac atcacatcac	60
	caaagagtg agaaactttt tctggtagtt ctggatcagc aagtatcaag attacctggg	120
	atgattcaga cgattcagac tcaccgaaat ctttgataa tgccaaaggg tacacaattt	180
25	ctttatgtac tggacctact tcagatgggg atatccagt tttggatcca ttagtcaaga	240
	acgaagctat tgcaggtaaa tctaaaacag tttctattcc ccagaactca gtacctaatg	300
	gttattacta tttccaaatt tacgttactt tcactaatgg aggtaccact attcattatt	360
30	caccacgttt caaattgact ggtatgtctg gtccaactgc cacttttagat gtcaccgaaa	420
	caggatcggg gccagcggat caagcttcag gatttgatac tgcaactact gccgactcca	480
	aatctttcac agttccatat accctacaaa cagggaagac cagatacgca ccaatgcaaa	540
35	tgcaaccagg taccaaagtg actgctacaa cctggagtat gaagttccca actagtgtctg	600
	ttacttacta ctcaacaaag gctggcacac caaatgtggc ctctactatt accccaggtt	660
	ggagttatac tgctgaatct gccgttaact atgctagtgt tgctccatat ccaacatact	720
40	ggtatcctgc cagtgaacga gtgagtaagg ctacaattag tgctgctaca aagagaagaa	780
	gatggttggg ttga	794
45	<210> 267 <211> 654 <212> DNA <213> Candida albicans	
50	<400> 267 acattcattg ggttcattct cagaaaacaa taatgcctg ggtccattaa gtggagttcc	60
	aactccatca ttttctaatt tgaatgatta tttccaacaa aaaagtaaca gcaataattc	120
	tcgattatct aatgctagtt catcatcatt gagttcatta agtggaacaa taagatcttc	180
55	ttcatcgact aatttagctg gtttacaag attaactcca ttaactagta ctacaaacaa	240

EP 1 770 171 A1

	tacaaacaac acaacaacat ctaataactaa taataataat atgacaaaac caagtataat	300
	acaaaaacaa ccatcttcta catcattaaa tttagaattt tataatggca acaatcaaca	360
5	acaacagaat tatcataccc ataagaaatc tcgacaaaat tcaccatcac aaacccaat	420
	tcatttatca agttcacgta aaagcgctaa taatctgttt ataatatcac ctaatgaaac	480
	cccattacaa actccattac aatcaccaca attaaaacca tatcaagatc aaccaccaac	540
10	taatgtcaat atcaacgta gtgcaccatc agatacattt attggaactg ctgttactga	600
	aaaattaaat aatattagta gtattgctgg taatggaaca caattaccac caat	654
15	<210> 268 <211> 529 <212> DNA <213> Candida albicans	
20	<400> 268 tgtcccagaa agtgctaaac acattttcaa ccaagaaact ttagcatttg ttgccacttt	60
	gcaccgtggg ttcgaagcca gaagacaaga attggtgaac aacagaaagg aacaacaaaa	120
	attaagagat caaggtttct tgccagattt ctaccagaa actgaatata ttagaaatga	180
25	tgctacctgg actggtccac cattggctcc aggtttagtt gacagaagat gtgaaatcac	240
	tggtccaacc gacagaaaaa tggttatcaa tgccttgaac tccaatgttg ctacttatat	300
	ggccgatttt gaagattcat tgaccccagc ttggaaaaac ttggttgaag gtcaagtcaa	360
30	tctttacgat ggtgtcagaa gaaacttgac tgctaacatt aatggtaaaa attatgcctt	420
	gaacttggac aaaggtagac acattccaac gttgattgtg agaccaagag gatggcattt	480
	ggatgaaaag catgtattgg ttgacggtaa accagtttcc ggtgggtatt	529
35		
40	<210> 269 <211> 647 <212> DNA <213> Candida albicans	
	<400> 269 ttagctcatc aacatcatca acataaagaa gaaaaaagag ctgttcatgt tgttaccacc	60
	accaatgttg ttgtgtcac cattggtaat ggtgatcaaa ctaccacttt tgctgctcca	120
45	tctgtagctg ctgattctag tgtagtggt tctgtcaaca ctgaaccacc tcaaatcac	180
	ccaactacta ctcaagatgt tgcttctgct tctacttate catcttccac tgatggttct	240
	gcgctttctt cttctgctgc cgtttcttct tcttctcaag ctggttctga accttctggg	300
50	ggtgttggat ctggtgggac taaagggtatt acttattctc catacagtga caatgggtga	360
	tgtaaatcat catctcaaat tgccagtga attgctcaat tatctggatt taatgtcatt	420
	cgtttatatc gggttgattg tgatcaagtt gcagctgtat taatagctaa aacttcatct	480
55	caaaaaattt tcgctgggtat ttctgatgtt tctagtatta catctgggtat tgaaagttaa	540

EP 1 770 171 A1

gctgaagccg ttaaaagtat ttgcggtagt tgggatgata tttacactgt ctctattggt 600

aatgaattgg ttaatgctgg ttctgccact ccaagtcaaa ttaaagc 647

5

<210> 270
<211> 636
<212> DNA
<213> Candida albicans

10

<400> 270
actgtcgttt ctggtcattc tggtaaagat acttctctt ctaaatacaac tgttgccgaa 60
tacctgggg ttgaagaaat cactaccacc ttgaattatg actatttagt tgttggtggt 120
ggtgctcaac catctacttt cggtattcct ggagtcgctg agaattcaac ctttttgaaa 180
gaagtcagt atgcttctgc tattagaaga aaattgatgg atgttattga agctgccaat 240
attttaccta aagatgaccc agaaagaaag agattattgt ccattgttgt ttgtggaggt 300
ggaccaacgg gtgttgaagc tgctggtgaa atccaagatt atattgacca agatttgaag 360
aaatgggttc ctgaagttgc cgatgaattg aaagtctcct tgggtggaagc tttaccaaac 420
gttttgaaca catttaacaa gaaattgatt gactatacca aagaagtttt caaagacact 480
aatatcaatt tgatgactaa taccatgac aaaaaagtca atgataaaag tttgattgca 540
aaccataaaa accctgacgg atctactgag tctattgaaa ttccatatgg tcttttaatt 600
tgggctactg gtaatgcacc aagagatttc actogt 636

30

<210> 271
<211> 666
<212> DNA
<213> Candida albicans

35

<400> 271
ggtacgaaca gacaaacacc tgaagaaact gacattggta tgattgcca ttattttgaa 60
aaataccagt ttgacgggtt aattattggt ggagggtttg aagcatttgt ttcgttagag 120
caattggaaa gatcaagagc tatgtatcca tcgttcagaa ttctatggt tttaatccct 180
gccaccattt caaataatgt tcctggtacc gaatattctt taggggctga tacctgtttg 240
aatctgtaa tggaatattg tgacattgtc aagcaatcag cttcagctac cagaggatca 300
gcatttatta ttgatgttca aggaggtaat tccggatata ttgccacatt tgccctatta 360
atcagtggag cacaagcatc ctatgttcca gaagaaggta tttcattaca gcaattggaa 420
atggatatca attcattgag agaagcattt gccgtggaac aaggaatgac aaagagtgg 480
aaattgatca tcaagtcgag taatgcatcc aaagtactaa cccacacac attggctgac 540
atattcaacg atgaatgtca cggtgacttt gacactaaga cagctattcc gggacacgtc 600
caacaagggtg gattaccttc accaatagat agaagcagag gtgatagatt tgccattaga 660

55

EP 1 770 171 A1

	gctggtt	666
5	<210> 272 <211> 588 <212> DNA <213> Candida albicans	
10	<400> 272 ttagccaagt ttgaatcgtc cccccacca gttgaagttg ttggtaacaa attttatttt	60
	tccaataatg ggtctcagtt tttaatcagg ggtatcgctt atcagcaaga tgccgcgggc	120
	tcagtttcct ccggttacga cgccgatcct aatagaaaat acaatgatcc tttagccgat	180
15	gctgacgctt gtaaacgtga cgtcaagtat ttcaaagaat caaacaccaa tactttgaga	240
	gtttatgcta ttgaccaga taaggatcat gaagagtgtg tgaaaatttt cagtgcgct	300
	ggtatttaca ttgttgctga tttatcagaa ccaactgtat cgattaacag aaacaaccca	360
20	gaatggaact tggatttata caaacgttat aaaaagtca ttgataagat gcaagaatat	420
	tctaattgtt tgggattttt tgctggtaac gaagtaacta ataatcggtc aaataccgat	480
	gcttctgcat ttgttaaggc tgccattaga gatatgaaga aatacatcaa ggagtctgat	540
25	tatagacaaa ttctgtgttg ttattcatcc aatgatgacg aagaaatt	588
30	<210> 273 <211> 609 <212> DNA <213> Candida albicans	
	<400> 273 tcaatcttgg ctgctacttc attcgtttct tccgtggctg ccgaagattt gctgctatt	60
35	gaaattgttg gtaacaaatt cttctactcc aacaatggat cccaatttta catcaaaggt	120
	attgcttacc aacaaaataa cttggactcc aacgaatcat ttgttgacct attagctaatt	180
	cctgagcact gtaaaagaga tattccatac ttggaagctg tcgactacga ctccaatgtc	240
40	atcagagttt atgctttaga caccagtcaa gaccatactg aatgtatgca aatgttgcaa	300
	gatgcgggta tttatgtcat tgccgatttg tcccaaccag atgaatccat caacagagac	360
	gacccatcct gggatttgga tctttttgaa agatacactt ctgttgctga tttgttccac	420
45	aactacacta acatttttagg tttctttgcc ggtaatgaag tcaccaacaa gaaatcaaac	480
	actgacgctt ctgctttcgt taaggctgct atcagagata ccaaagccta catcaaaagc	540
50	aaaggttaca gaagtattcc agtcgggttac totgccaatg atgattccgc catcagagtt	600
	tcattagcc	609
55	<210> 274 <211> 684 <212> DNA <213> Candida albicans	

EP 1 770 171 A1

	<400> 274	
	attgggtatc aacaccattc gtattttattc aataaatgca cacctaaacc acgataaatg	60
5	catgaccatg ttggccaaag caggaatata cttgtttcta gacgtaaact cgccattgcc	120
	acaccaccac ctaaaccgat acgagccgtg gaattcgtag aacttgtagt actttgaaaa	180
	tgtctttaag gtggtagaac agttttccca ctacaacaac acgctagggt ttattgcggt	240
10	gaacgaaatt gtcaacgacc ccatctccgc cagtgtggct gcccacatg tcaaagcggt	300
	ggcccgcgaa atcaaaagct atatcgaata caatgcacca agaaccatcc ccgtcgggta	360
	ttcagcggcc gacgacttga actatcgaat gccactagca cagtacctcg agtgtggcga	420
15	cgacaacccc aaagaatcag tcgactttta tggcgtcaac tcgtaccagt ggtgtggcga	480
	ccagacattc tacagcagcg ggtacaacat cttgggtcaac gattacaaac atttcaccaa	540
	accaatgttt ttttcggaat atgggtgcaa tgaggtgttg ccgagaaatt tcgatgaagt	600
20	cccagtattg tacacaaacg atatgataga tgttttcagt ggcggtattg tatacgagtt	660
	caccagga ccaaacaact atgg	684
25	<210> 275	
	<211> 532	
	<212> DNA	
	<213> Candida albicans	
30	<400> 275	
	attagctgaa catgccagag accacacatt gagattcggg agcaaatcgc cttttttcag	60
	aaaatacttt ggaaatgaca ctgcaagtgc tgaggtcgtt ggtcattttg aaaatgttgt	120
	cggtgctgac aaatcatcca ttttggttct ttgtgatgac ttagatgata agtgcaaaaa	180
35	tgatggctgg gctggtatt ggagagggtc caaccatagt gatcaaaacta ttatttgtga	240
	cttatctttt gttaccagaa gatacttacc ccaactatgc tccgggtggat ataccgtctc	300
	gaaatctaag acaaacattt ttgggcagg tgacttggtta cacagattct ggcacttgaa	360
40	atcgattggg caacttggtt ttgaacatta cgctgacact tatgaggagg ttcttgaatt	420
	ggctcaagaa aattcaactt atgctgtaag aaactcaaac tcattgattt attatgcttt	480
45	ggatgtgtat gcatatgatg tgacaattcc cggcgaaggg tgcaatggag at	532
50	<210> 276	
	<211> 506	
	<212> DNA	
	<213> Candida albicans	
	<400> 276	
	gatttacacg cctcaciaat tcaagggttt ttgatgttc cagtagataa cttgtacgct	60
55	gaacctagtg tggttagata catcaaggaa actattgatt atagtgaagc tataattata	120
	tcttctgatg ctggtgggtgc caagagagct gctggattgg ccgatagact tgatttgaat	180

EP 1 770 171 A1

	tttgaattga ttcataaaga aagagccaga gctaatagaag tatctcgaat ggtttttagtt	240
5	gttgatgtca ccgataagat ttgtgttatt gttgatgata tggcggatac ttgtgggtact	300
	ttggctaaag ctgccgaagt attgttagat aataatgcta aagatgtcat tgccattgtc	360
	actcatggta tattatctgg gaacgcaata aaaaatatca acaattctaa attgaaaaaa	420
10	gttgatgta ccaacaccgt tccatttgaa gacaaattga aactttgtct taaattggat	480
	acaattgata tttctgctgt tattgc	506
15	<210> 277 <211> 606 <212> DNA <213> Candida albicans	
20	<400> 277 taccacgata gctccatttc ccttagtggt tccaagaaca agagagaagc tgaaattgtc	
	aatgaagatg gtacaattga aaagagaact ttgggaagcg ctgggtgtaa tgccgggttc	120
	aatgccgat ttgtcgtgtc taatgccaaa aaattatctg acgggttctta tggatttgat	180
25	tgtaacttca agagtgattc ttctgtccaa ttgaacctgg cctttggtaa aaaagttaaa	240
	caattgagta tcaccgggtac tggttattct gatatttcat tattaggaaa tgttgctaatt	300
	ccatttgaat ggtcagcttc cttgaaagtc aaagcagaaa ttgttaaagg aaaatgttgt	360
30	cttccatcag gtttcagaat cgttacagat ttcgaaagca actgtcctga atttgatgcc	420
	atcaaacaat tttttggcag ttctcaaata atttacaag tcaatgccgt ttctaacgca	480
	attgggtactt ttgatgcttc tgcattatc aatgctcaag tcaaagcctt ccctgccaaag	540
35	agagaattag atgaatttga agaattaagt aacgatgggt ttactcacag caagagaact	600
	ttgggt	606
40	<210> 278 <211> 625 <212> DNA <213> Candida albicans	
45	<400> 278 gtgggtgttac tgttggtgaa actgccaccg ttgtacaac tgttaccgtt ggtgcaactg	
	tcactgggtg tgaccaaggt caagatcaag ttcaacaatc agctgctcca gaagctgggtg	120
	atattcaaca atcagctgtt ccagaagctg atgatatcca acaatcagct gttccagaag	180
50	ctgaaccac tgccgatgct gatgggtggt atgggtattgc aattaccgaa gtctttacca	240
	ctaccattat gggatcaagag attgtttatt ccggtgttta ttacagttat ggtgaagaac	300
	atacctatgg agacgttcaa gttcaaacc tcactattgg ggggtggcggc ttcccttcag	360
55	atgaccaata tcctacaact gaagtttctg ctgaggctag tccatctgct gttactactt	420

EP 1 770 171 A1

	cttctgctgt tgctactcct gacgccaag tcccagactc tactaaagac gcttctcaac	480
	ccgctgctac tacagctagt ggctcctctt ctggtagtaa tgactttagt ggtgttaaag	540
5	atacccaatt tgctcaacaa atcttggatg ctcaacaacaa aaaacgtgct agacatggtg	600
	ttccagattt gacttgggat gctac	625
10	<210> 279 <211> 220 <212> DNA <213> Candida albicans	
15	<400> 279 aagagatgat cctcatacta ttgaagcctt gagacaacaa caacaacaac cagtctcaac	60
	ttctgaagggt caacaagttg ctcaaagaat tgggtgctgct gattacttgg aatgttctgc	120
	taaaaccgggt agagggtgta gagaagtgtt tgaagctgct actagagctt ctttaagagt	180
20	taaagaaaag aaggaaaaga agaagaaatg tgttgtcttg	220
25	<210> 280 <211> 531 <212> DNA <213> Candida albicans	
30	<400> 280 taagagagat ggccgtaaag agccagtagc ttctgacaaa atcactgcca gagttcaaag	60
	attatgttac ggtttgaatc caaaccacgt tgaaccagtt gctattacc aaaaagttat	120
	atcagggtgtt taccaggggg ttactactat tgagttggac aacttggctg cagaaattgc	180
	tgctacaatg acaacaattc acccagatta cgctgtctta gccgctagaa ttgccgtatc	240
35	aaatttacat aagcaaacca ccaaacagta ttccaaagtg tctaaggatt tatatgaata	300
	cattaatcct aagactgggt tacactctcc tatgatttcc aaggaaacct acgacatcat	360
	tatggaacac gaagatgaat taaactcagc cattgtttac gacagagatt ttaactacaa	420
40	ttattttggg ttcaagactt tggaaagatc atatttgta cgtatcaacg gtaagggtgc	480
	tgaaagacca caacatttga tcatgagggt tgctgtcgggt attcacggt a	531
45	<210> 281 <211> 453 <212> DNA <213> Candida albicans	
50	<400> 281 ttttggacct caaatggacc agtatttgag agaaaaacta ttaagtgatg tggaaggtag	60
	atgtacagggt caatttgggt acatttgtgtg tgttttggat tcaatgaata tagatgttgg	120
	caagggaaga ataattccaa gtactgggat ggctgaattt gaagtcaa atagagctgt	180
55	tgtgtggaaa ccattcaaag gtgaagtgggt agatgcagtt gtaacaaccg tcaataaaat	240

EP 1 770 171 A1

	gggatTTTTc gccgatgttg gccattatc agtgtttgtt agtaccatt tgataccttc	300
	agatatgaaa tttaatcctt cagcaaacc accagcatat gtgagtcccg atgaaaacat	360
5	tgaaaaggga tgcagggtta gattgaagat tgttggtaga agaactgatg tcaatgagat	420
	ttacgccata ggaagcataa aagaagacta ttt	453
10	<210> 282 <211> 525 <212> DNA <213> Candida albicans	
15	<400> 282 ccaagaactt accattattg aacaaccact tcagaaagca ctggcaagaa agagtcagag	60
	ttcactttga ccaagctggg aaaaaagctt caagaagaca atctagattg agaaaagctg	120
	ccaagattgc cccaagacca atcgatgctt taagaccagt cgtcagagct ccaactgtca	180
20	aatacaacag aaaagtcaga gccggtagag gtttcacttt ggccgaattg aaagccgttg	240
	gtattgctcc aaaatacgcc agaaccattg gtatctcagt tgaccacaga agacaaaaca	300
	aatctcaaga aacttttgat gctaagctcg ccagattaca agaatacaaa tctaaattag	360
25	ttatctttga caaaaagacc aaggcttctg aagttgcttc tttcgaacaa gttgatgtct	420
	ctgccacctt ccagttgaa caaccagctc cagaatctgg tttgagagct gttgaagttc	480
	cagaacaaac tgcttacaga accttgagat tggttagaaa cgaaa	525
30	<210> 283 <211> 400 <212> DNA <213> Candida albicans	
35	<400> 283 ttaaaggatt caaaaagggt gtccttaggg cccacagac aatgcgtcag aaattcaaca	60
	tgggagaaat caccaagat gctgtttatc tcgatgctga aagaagattc aaagaaatcg	120
40	aaacggaaac aaaaaagttg agtgaagaat ccaagaaata tttcaatgct gtcaatggga	180
	tgtagatga acaaattgat tttgccaaag cgtggctga gatattataa ccaatcagtg	240
	gtagattatc ggacccagtg gctacggtac cagaagataa cccacaaggt attgaagcat	300
45	cggaactgta ccaagcagtg gttaaagatc tcaaagatac cttaaaacc gatttggaat	360
	tgattgaaaa aagaattggt gaaccagcac aagaattatt	400
50	<210> 284 <211> 522 <212> DNA <213> Candida albicans	
55	<400> 284 catggcacca gaaagaacca ccaattataa caccatcgt ttaatcaacc aattaattga	60

EP 1 770 171 A1

	tatgaatcaa tatgagtcaa ttgaaatcaa tgggacaaca gtgacaaaat caaactgtaa	120
	atattttacct acattggctg gggatatttg gtcattggga gtattgttca ttaatatcac	180
5	ttgttcaaga aacctatggc ccattgcac atttgataat aatcaaaaata atgaagtgtt	240
	taagaattat atgttgaata ataacaaggc tgttttgagc aaaatcttac ccatttcctc	300
	acaatttaat cgcttattag atagaatttt caaattgaat cctaatagata gaatagattt	360
10	accaacttta tacaagaag ttattcgttg tgatttcttc aaagatgac attactacta	420
	tgcccaacat caacatcac acaatcaca tcaaatcaat aatgcttaca atcactatca	480
	gaaacaacct aatcaagcaa gacctactgc aaaccaacaa tt	522
15		
	<210> 285	
	<211> 500	
	<212> DNA	
	<213> Candida albicans	
20		
	<400> 285	
	tataatgccc cgaaaataaa gtttaccgat actgaaggac aagaagaaca tttttatttc	60
	aatcgagta acaattcaac caatgattta accagtcac actcttcac aactcaacta	120
25	caagatgcc attccagaag acaagcccca ccaccaccac cacataatcc attttctgac	180
	aattcccatg aaaatagtac tgaatcatta tatcaatcag aaacaagatt tcatcaacca	240
	ctacttcata atgatagtaa taatagcaat agcagtatag gcaataatag acaacgtatt	300
30	ccatcacaac aacatgatac actgtcatta tattcagcat caccaatac aacatcacct	360
	ttagtttcta attttcaatc atatctggac aaccaagacg aaatgactcg aggtaagtat	420
	aaccagaata caaatcggtc aagttcaa atatttcaac acagtccaac atcagcaggg	480
35	tacgatagat atccgcttaa	500
	<210> 286	
	<211> 279	
	<212> DNA	
	<213> Candida albicans	
40		
	<400> 286	
	tggaacctgt ttgtacttga cgtcattgtc gaaaaaacac ccagagaaat tgtgtaaaga	60
45	gaaatacgtc cacggcggtg acgtgttgat cgacccaact gccaatgac acccatctgc	120
	cttaatcggc ccaaactgca ccacgggtcc aaacgttggt gtcgggtgaag gtgctagaat	180
	ccgaagatca gtgttggttg ccaactccca agtcaaagac cagcctggg tcaaatctac	240
50	cattgttggt tggaactcca gaattggaaa gtgggctag	279
	<210> 287	
	<211> 597	
	<212> DNA	
	<213> Candida albicans	
55		

EP 1 770 171 A1

<400> 287
 gatttcctag ccggaatgca cgacaatcct gagacggaag tcgatcgctg atgcccatgg 60
 5 tgcgtggtga aaaaattttct tagaaaattt gttctttcct tcaactgctt ttaagaaaga 120
 gaggttcaag tgggtttaagt acgacgggtca caaagattgc ggcttatgag gcccgaaactg 180
 agttgaaata caaaatcaag atataattat ataccttact tgtccatatt gttttataat 240
 10 acattcttca gatattttaa tttctgtgta tcaacctata aaacagagat acattcagtg 300
 catttagtat actgagtga ctggtacctg tgacattcaa gataactgtt tcgcgcaacgc 360
 tggcagacga acagattaga agcttggtaa agttctgctt tgcacaatag gtttcagatt 420
 15 cagaaagatt gttaaaactt agatcatctt cgttcatcac aaaccaagaa ctttacggaa 480
 tgtacgaata tcactttcat tagtagataa ttcgttactt aatccagtga ttaatcttga 540
 gggtcgaaag atggttaata gaaatttatt tgacaattac gactaagggtt acataat 597
 20
 <210> 288
 <211> 350
 <212> DNA
 <213> Candida albicans
 25
 <400> 288
 aagacgactg agcgtgtccc ttttgtataa actttataat tttcaatgaa tcttttacct 60
 cattgggtttc aacaccgcca ctaacatcgt agcccaaaat gttgtcaa at gtaggcaaat 120
 30 tctcaggggt tagcccacca gcaagtatag cttttgtagg taacttctca ataaacgtcc 180
 aatcaagtaa cttcccttca cccccaactt ccgaatcaag caacggcaaa ctcacacatt 240
 gcgttaacag caagctctgc tcttccaaaa ggtctagctc gtcaggaaca acatacctgg 300
 35 gaattaacct aaattctgta cccaaaaact ctagcttatt ttccagtcca 350
 <210> 289
 <211> 330
 <212> DNA
 <213> Candida albicans
 40
 <400> 289
 acatgtcaag aggattgttc atgtaagaat aatgaagccc ccacaacaaa gacaactgcc 60
 45 accacaacta atgttgggtga tggccctggc cctggcccta tccctggcaa taatgatgat 120
 gatgatgatg acatttggtc agatgatgat acgaaactaa tacctgaaaa tgatataata 180
 cgatcacatt ataaaaaagg gtatgttgat gggataactc aagctaaaga atottcatta 240
 50 caacaaggat ttgatgatgg atatcctgaa ggtgcaaaat tagggattaa agttgggtgaa 300
 attttagcaa atttaatacaa tcaatgtaaa 330
 55
 <210> 290
 <211> 524

EP 1 770 171 A1

<212> DNA
<213> *Candida albicans*

<400> 290
5 gccgaagata ctaaaccaaa gactgaagaa tcatcttcta ttccaaaacc accaacttct 60
aatgtattct ccatgttttg tgccaaaaaa gagaaaaaac cagaacaaga agattcagac 120
aacaagaaag aatccgataa aaaggaagaa aaagatacta gcaaatcaac tggatgatgat 180
10 aatgaagtag ctgaagaaga agaagctgat gtcgaattta ctccagttgt tcaattggat 240
aaaaaagttg acgttaaaac caatgaagaa gatgaagaag tcttgtataa agttagagcc 300
aaattattta gattccatgg tgattcaaaa gaatggaaag aaagaggtac tggatgatgtt 360
15 aaatttttta aacataaaac tactggtaaa gttagaatth taatgagaag agataaaact 420
ttgaaaatth gtgctaatac tttgatttct gctgattatg aattgaaacc aaatattggt 480
tctgatagat cttgggttta tactgttact gctgatgttt ctga 524
20

<210> 291
<211> 513
<212> DNA
<213> *Candida albicans*

<400> 291
25 tctgatgttg ctgtttgttc ttcaagaact ttccgtcaaa gagctgtttt gaaatttgct 60
gtcacactg gtgctactgc cattgctggg agattcactc caggtaactt taccaattat 120
30 atcactcgtt cattcaaaga accaagatta gttgttggtta ctgaccaag aaccgatgct 180
caagccatca aagaatcatc ttatgttaac attccagtta ttgccttgac tgacatggac 240
tctccatctg aatacgttga tgttgccatt ccatgtaaca acaaaggtaa aactctatt 300
35 ggtttaatct ggtggttgct tgctagagaa gtcttgagat taagaggtat tatcccagac 360
agaactaccg aatggctcgt tatgccagat ttgtacttct acagagacco agaagaaatt 420
gaacaaaatg ccgtcgaaga agctaaaact gaagaagttg aagaagctcc agttgctgaa 480
40 gctgaaaccg aatggactgg tgaaactgaa gat 513

<210> 292
45 <211> 613
<212> DNA
<213> *Candida albicans*

<400> 292
50 tcgaccatac catccaatac ttgaatcatt ggaatttcaa accaatcaac atttaattca 60
agaatattct ttagatattg tcaatacttt atctcaattg gaatcactta cattagttaa 120
tcctgccatg attgatttac aaccagaaat tcaatggttt atgcgtccat ttttattaga 180
ttttttaatt gaattgcatt cttcatttaa attacaacca acaacattat ttttatgtct 240
55 taatattatt gatagatatt gtgctaaaag aattgttttc aaacgtcatt atcaattagt 300

EP 1 770 171 A1

	tggttggtaca gcattatgga ttgctagtaa atatgaagat aaaaaactgc gtgtacccac	360
5	attaaaagaa ttaacaataa tgtgtcgtaa tgcttatgat gaagaaatgt ttgttcaa	420
	ggaaatgcat attttaagta ctttagattg gtcaattggc catccaactt tagaagattg	480
	tctacaatta gccattgac tgaataattt atctaacaac accactaatg atattgaaaa	540
10	caaaagtgtg cgtcctaata ggaaatcaag tatatcatca gctgtaactg ctggtgctag	600
	gtttctttgt gaa	613
15	<210> 293 <211> 251 <212> DNA <213> Candida albicans	
20	<400> 293 agaaatttgg cctgatgtta attatattacc agattttaaa tcaagtttcc ctcaatggaa	60
	aaagaaacct ttgagtgaag cagttccaag ttgggatgct aatggaattg atcttttgg	120
	tcaaatgttg gtgtatgac caagtagaag aataagtgc aaacgagctt taattcatcc	180
25	ttattttaat gataatgatg atcgtgatca taacaattat aatgaagata atattgggat	240
	tgacaaacac c	251
30	<210> 294 <211> 564 <212> DNA <213> Candida albicans	
35	<400> 294 aacagcaacc agaaatcaag ttaggtatga gaccattgtt gttggatttc ttaatggaag	60
	ttatcactat tctcaacttg tctagatcta cattcccttt gactgtcaat ttgattgac	120
	gttattgttc aaccagaatt gtcaagaaac aacattacca gttggtggga ttgactagtc	180
40	tttggatcag ttgtaagaac ttggattcaa agttcaaagt tctacattg aatgatttga	240
	gaaaaatttg tgttgacagt tattacaaag aattgtttgt ggaaatggag aaacatattt	300
	taaaatcatt agaatgggtc gtcaatgctc cgacatttga tgcccttatt gatttgtatt	360
45	caaacttggt gattttctaac agcagtaact ttgagggtgc aaacattatc aaaaaatcat	420
	ctcataaaat aaaattgttt tccaattata ttggtgaatt gttccagttt tatccaaaca	480
	tttattacga ttacacatcg tcacaaattg ctttgattgc tattttaatc acggtcttga	540
50	cgttgaagat tctgttgat ttaa	564
55	<210> 295 <211> 580 <212> DNA <213> Candida albicans	

EP 1 770 171 A1

<400> 295
gctaccactt taaccgacac cgggtgtatcc tcaggattga ataataccac ttctgggtggc 60
5 ggcagtgata gtgcaacctc cacacacaac aacaatgagg catcgaccaa accaagtaat 120
ggcagtga aaatcgctacc ggagtacact acaactgccc gcggtagaga tgagtttgga 180
ttccttaatg aagccacacc aagtcaatac aaagccaatt cagattatga agacgatttc 240
10 ccattggatt atatcaatca gaccactcaa aattctgaag attatattac ttgggatgca 300
aattatcagg caggaagtta tgcaaatatg atcgaagaca attacgattc atttttggtat 360
gcaacactat ttatacctcc aagtcttggc gtacctacag gtacagctgc gactgcaaca 420
15 acatcaaacc aagttgcctt caacgacgaa tacttgattg aacaagccca accaataagg 480
actccactac cccaatatc atcatcaaca atatccggat tattacaacc aaaatcagct 540
gctaaattct ttctactaca gagtgcataat ggtggagaag 580
20
<210> 296
<211> 604
<212> DNA
<213> Candida albicans
25
<400> 296
tttcatcacc acctcaagtc tctgtaacat catctgaagg agtttcacat gtcaatacac 60
gtcaatatattt ggggtgatgtt tcaaatcaat acataacaaa tgctaaacca acaataaaaa 120
30 gaaaaccatt ggggtggagac aatgcccctc tacaaaaaca acagcataga ccatctagac 180
caatacccat tgccagtgat aacaacaata atggtagtac cagtagcagt agcaacagta 240
gcaacaacaa taacaacgac gcaaatagac tagcatcttt ggcagttcca tctcgattac 300
35 cccaaaaacg acaagctact gaatcgctga caaatctagt agagaaatta agagtaccac 360
aaccagaagt aggggaaaga agtcagtcac accataagaa atcacgttta attgattatg 420
aatggcagga ttgggatgaa gaagataatg acgaccaatt aatgggttagt gaatatgtta 480
40 acgaaatatt ttcgtactat tacgaattag aaacacgaat gttacctgat ccgcaatatc 540
ttttcaaaca aacattgtta aaaccaagaa tgagatcgat attgggttgat tggcttgttg 600
aaat 604
45
<210> 297
<211> 735
<212> DNA
<213> Candida albicans
50
<400> 297
ccagcaaaca attcctaate aattgtcaca gccacaacct cagcattaca atggatctaa 60
tcgtaattac acaagtgtc ctagtggtgc cccataacct tccaattcta ccagtggacc 120
55 ttcacaacag ccaccactac caggtaaca agcagtacct atcccaccac atgtatcgac 180

EP 1 770 171 A1

	aatgcaacaa ccaactcctg ttcaggatac gttgaacgcc togagcactt ccactgtggg	240
	gcaattccaa ccaccaggaa tcagaccacg agtaacaact accatgtggg aagatgaaaa	300
5	aactttgtgc tatcaagttg atgccaataa tgtgtcgggt gtcagaagag cagataataa	360
	tatgatcaac ggaaccaaat tgctcaatgt ggcccaaagt acacgtggta gaagagatgg	420
	gattttgaaa tcagaaaagg tgagacacgt tgtgaaaatc ggatcaatgc atttgaaagg	480
10	agtctggatt ccatttgaaa gagcattggc catggctcaa cgtgaacaaa ttgtggatat	540
	gttgtatcct ttgtttgtca gagatattaa acgagtgatt caaacggag taactcctaa	600
	tgcagctgct gcaacggcgg ccgcccgtgc cactgccact tctgcttcgg ctccctccacc	660
15	tccacctcca ccggttgctg ctgctactac tactgctgct actgctatct ccaaaagttc	720
	tagcggtaat gggaa	735
20	<210> 298 <211> 563 <212> DNA <213> Candida albicans	
25	<400> 298 gctcgtttga ttagatttgg gatctttgcc cttgttttaa taggatgtgg ctatatcctt	60
	acaagaggct catcattcca acctccaaat tatcaacaaa cacaatcacc cgccgctcat	120
	gaaaaacaga ccggtaatgt tgctgctgga ggtggtgctg gttcaggttc cgcaggagct	180
30	caagttccat taggcaaaaa tagaggtcca ataccaaaag caattatggg agctggtgaa	240
	ggtggttagtg atgctccggt tcctcaacaa gatattcctg atagttatac cctcaatgac	300
	aaaattaagg ctacatttgt cactttggcc cgtaactctg atttatattc tttagctgaa	360
35	tcaattagac acgttgaaga tcgtttcaat aagaaattcc attatgattg ggttttcctc	420
	aatgatgaag aattcaatga tgaatttaaa gaaactgttg gtagtttagt tagtggtaac	480
40	actaaatttg gtttgattcc aaaggaacat tggatcatatc ctccatggat tgatcaagaa	540
	aaagctgctt tagtccgtga aca	563
45	<210> 299 <211> 554 <212> DNA <213> Candida albicans	
50	<400> 299 cccaactaat tcagcatcac ttaaacagaa acaacgtcaa cagctaggaa ttaaattcga	60
	gattggtgct tcaacatcag acgtatatga tccccagtt gctagttatt tgagtgtctg	120
	tgattcacct agccaatttg ccaacactgc cttcatcat agtaatagtg ttggttattc	180
55	tgctagtga gctgcagctg ctgcggaatt acaacaccgt gcagaattac aaagaaggca	240
	acaacaattg caacaacaag aattacaaca tcaacaggaa cagttacaac aatatcgaca	300

EP 1 770 171 A1

	ggctcaagca caggctcaag cccaggcgca agctcaaaga gaacaccaac agttacagca	360
5	tgcttatcaa cagcaacaac agctacacca attgggtcaa ctttctcaac agttggcaca	420
	accacatttg tcacaacatg agcatgtcag agatgcgctc actacggatg aatttgatac	480
	taatgaagat cttcgttcac gatacattga gaatgagatt gtaaagacat ttaacagtaa	540
10	agccgaattg gtac	554
	<210> 300	
	<211> 503	
	<212> DNA	
15	<213> Candida albicans	
	<400> 300	
	aacagcaagc tgctcagttg cagcaacaaa tgcaacagca attgcaagcc agtggggtgc	60
20	caacaacacc aaactattct gaattgttag gtcaattagg ccagttgtct caacaacaat	120
	cacagcaaca gcagcttcat catatacctc aacaacgtca acgaaccag agtcaacaac	180
	tgcaacagca acctcaacaa actgcacatg gattggatca accagatgct gcagttattg	240
25	ctgcaattga agctagtga gcagcagctg ttgogtctca aggatcacct aatgtcactg	300
	cagctgctgt agccgcatta caacacacac agggtaatga gcacgatgct caacaacaac	360
	aagatcgtgg tggtaataac ggtgggtgcta ttgattcaaa tgtcgatcca agtcttgacc	420
30	caaacgttga ccctaattgtt caagctcatg atcattctca tggattaaga aattcgtatg	480
	ggaaaagaag tgggtttttg taa	503
	<210> 301	
35	<211> 724	
	<212> DNA	
	<213> Candida albicans	
	<400> 301	
40	gtcctttcaa gtgtttgtgg agcaactgta acattatattt cgagactcca gaaattttgt	60
	acgatcattt gtgtgacgac catgttggtg gaaagtcttc gaacaatttg tcattgactt	120
	gtctttggga aaattgtggc acaactacag ttaagagaga tcacattact tctcacttga	180
45	gagtccatgt ccattgaag cctttccatt gtgacttggtg tcccaaactc ttcaagagac	240
	ctcaagattt gaagaaacat tccaagactc acgctgaaga ccatccaaag aagttaaaaa	300
	aggcacaag agagttgatg aaacaacaac aaaaagaggc caagcaaca cagaaattgg	360
50	ccaacaagcg agcaaactcg atgaatgcaa ctaccgcac cgatttgcaa ttgaactact	420
	attccggtaa ccctgctgat ggattgaact acgacgacac ctccagaaaa agaagatacg	480
	aaaacaattc tcaacacaac atgtatgtgg ttaatagtat tttgaacgat ttcaacttcc	540
55	aacaaatggc acaagctcca cagcaaccag gcgttggttg aaccgcagg ttctggctga	600

EP 1 770 171 A1

	gttcacccac caagaggatg aaagccggca ctgagtataa cattgatgtg ttttaacaagt	660
	tgaatcattt ggacgaccac ttgcaccacc accaccctca acagcaacac ccacaacaac	720
5	aata	724
	<210> 302	
	<211> 543	
10	<212> DNA	
	<213> Candida albicans	
	<400> 302	
	ataaaccaca taaggtctgg ttaccaggag aagaaatctc aggacaagtt gtattaattt	60
15	cgaaaaagaa tttggcaa atagtcataa cgttgctcgtt ggtgggggtt attaaaataa	120
	atgcatcgtc acatctgaag ttgaggcctt tgaagcatac gttatttgat tatactatta	180
	aaatctatgg taaagatgaa gaagaacaaa cagactcagc agagttagt aatggacttt	240
20	tgaagggcga acatgtgttt ccgtttattg taaagttgcc caataaaaga gtatatacgt	300
	cgattgattt tgggaaaggt tccatcaact acattttgaa agcagctata ggaaactcgt	360
	cgtcctatgt gatacctgcc tcgcccgaca atgccagtac tagcagttta acgaaaaaga	420
25	aaatactaca gaatcctagt cacacatcag aaaaagtc atagtctagta aatccaatag	480
	atgtttcgtt attgcctcga ccgaaaccaa agagattgat totcaaagat ccacgaacta	540
	gct	543
30		
	<210> 303	
	<211> 315	
	<212> DNA	
35	<213> Candida albicans	
	<400> 303	
	tgactacgat gactactgaa gaaatattgg cttcttatcc acaaatcacc gctccaaccg	60
	atcaaacagg ttacacatca aatttaacac ctgaacaaaa aaccacttta gatattttca	120
40	gacaacaatt aactgaattg gggtataaag acagattaga tgatgcatca cttttaagat	180
	ttcttagagc aagaaaattt gatattcaaa aagctattga tatgtttgta gcttgtgaaa	240
	aatggagaga agatttttgt gttaatacca ttttaaaaga tttccattat gaagaaaaac	300
45	ccattgttgc taaaa	315
	<210> 304	
	<211> 230	
50	<212> DNA	
	<213> Candida albicans	
	<400> 304	
	attggtttca aacagttact cagcacgcca atgaggatgc acagatattt ttagtaggta	60
55	acaagtgtga tgatgaagta aacagacaag tttctaaaga gcaaggtaa gaattagctg	120

EP 1 770 171 A1

	ctaaattaaa tgttccattt ttggaagcca gtgccaaaag caatgaaaac gttgactcta	180
	ttttttacga attggctagt attatccaag agaagcatgt tgaagagaat	230
5	<210> 305 <211> 575 <212> DNA <213> Candida albicans	
10	<400> 305 aaagagctaa ccacgtcaag gaaatcccac cattcttgca agatttagac attgccaaag	60
	ccaaccccgga gttcaagaaa cagcacctcg aatactatgt gttgtacaac ccagcgttct	120
15	ccaaagactt ggatattgac atgggtccact ccttagacca ctgcgtcagtt gtttgctgcg	180
	tgagattttc cagagacggc aagttcatcg ccaccggttg caacaaaacc acccaagtgt	240
	tcaatgtcac caccggagag ttggtcgcca aattgattga cgagtcctcc aacgaaaaca	300
20	aagacgacaa caccaccgcc tcaggcgact tgtacatcag atctgtgtgt ttctcccctg	360
	acggaaaact cttggcgaca ggtgcagaag acaagttgat tagaatctgg gatttgagca	420
	caaagagaat tatcaaaatc ttgagggggc acgaacaaga catttactcg ttagactttt	480
25	tccttgatgg cgatagggtg gtttcaggct ccggcgatag gtcagtcaga atctgggact	540
	tgagaacctc ccagtgttcc ttgactttgt cgatc	575
30	<210> 306 <211> 286 <212> DNA <213> Candida albicans	
	<400> 306	
35	aggtaggtgtc atgaaattat tagttggtaa taaggctgat ttgtctgata aaaaaatcgt	60
	cgaatatact gctgctaaag aatttgctga tgccttggac attccatttt tagaaacctc	120
	cgctttatca tcgaccaatg ttgaacaagc tttttacact atggcaagac aatcaaagc	180
40	ccaaatgaca aacaatgcc atgccggaaa tgctgccaat gccaaaggga aatctaattgt	240
	gaatttgaga ggtgaatctt tgacttctaa ccaatcgaat tctgt	286
45	<210> 307 <211> 558 <212> DNA <213> Candida albicans	
	<400> 307	
50	ttgccaatc agcattacaa tttgcaacaa agacaacagg cacaaggaca acaactcaaa	60
	ctgcaactaa acgagcaaaa tgccatgatg tctgcctcga ctcaacaata tctgtgccag	120
	gattttacaa atccttacc caatgcacag aatccgcag aacaacagca acagcaacaa	180
55	cctcttogaa ccagtcaca acaatgggac ggctaccaat ctcaaccttt gtattctgct	240

EP 1 770 171 A1

	gctggttaata ctataccatc ctcaatccag cagcaaatac caccacagaa tttgtctcca	300
	tcagagcagc aacaagtcaa gcaacaacag ccaactgccgc cagaacaagg aacaaagaaa	360
5	aaacctggta gaaaacccaaa attaaagaaaa ttatcggaac tgagtctctga aacaccacaa	420
	gttccaaaaa cagcatccag ttcttcgagc tcaccaactg cagtcaattc tggtaaacca	480
	attacaaaaa gatcgcgtat gggatgtctt acatgccgtc aaagaaagaa acgttggtgt	540
10	gaaacaagac caaggtgt	558
	<210> 308	
	<211> 450	
15	<212> DNA	
	<213> Enterococcus faecalis	
	<400> 308	
	atatcgaggt ggtctattta gaggacttag ctgctgaagc gttgattaat gaagagggtcc	60
20	gccgacaatt tattgaccaa ttcttagaag aagccaatat tcgcagcgaa tcagcaaaaag	120
	aaaaagttag agagttaatg ttagaaattg acgacaacga agaacttatt caaaaagcga	180
	ttgtctggcat tcaaaaacaa gaattacctt aatatgagca agaattttta acagatatgg	240
25	ttgaagcgga ttatccattc attattgatc caatgcctaa cttatacttc acgcgtgata	300
	actttgcgac aatggggcac gggatttctt taaatcatat gtattcagta actcgacaac	360
	gggaaaccat ttttgggcaa tacatttttg attatcatcc tcgttttgct ggaaaagagg	420
30	ttcctagagt ctatgatcgt tcagaatcaa	450
	<210> 309	
	<211> 280	
35	<212> DNA	
	<213> Enterococcus faecalis	
	<400> 309	
	aattaaacaa agcaggaatc aagaaacaag tggctactgt tttaacacag gtggctcgtag	60
40	atccagcaga tgaggcattc aaaaatccaa caaaaccgat cgggtccattt ttaacagaag	120
	ctgaagccaa agaagcaatg caagcaggtg ctattttttaa agaagatgca ggacgtggct	180
	ggcgcaaagt cgttccaagt cctaagccaa ttgacatcca cgaggctgag actattaata	240
45	ccttaataaa aaatgatata attaccattt catgtgggtg	280
	<210> 310	
	<211> 600	
50	<212> DNA	
	<213> Enterococcus faecalis	
	<400> 310	
	agttgcacaa gtacgatgg cgatggcttt taatcctcaa aaagattatt ttttaccgta	60
55	ttatcgatgat atgacgcgt gcttggtttg gggoatgacc tccaaagata ttttaatggg	120

EP 1 770 171 A1

	ttcttttggg aaagaagcgg atccttcttc ccatggtcgt caaatgccga atcattatgg	180
	ttcaaaagag cataatattg tttccttctc ttcaacagta agtacacaaa tgccattagc	240
5	aacaggtggt ggttatgcag cgcaacttca aaaagctgat tttggttgcg tgaccaccac	300
	tggggaaggg tctgccaatc aaggagaagt ccaagaagct attaactttg caggcgtaaa	360
	aaaattacca gtcatttttg ttggtgaaaa taatgaatat gcgatttctg tcccaattga	420
10	agaacagtat gccataaac gaatggccga tcgcgcgaaa gcttatggct ttgaagggtg	480
	gaccgttgat ggtagtgatt ttgctgaagt ctatctagca tttaaagaag cagtaaaagc	540
	ggctcgcggg aaaaaaggac caaaattgat tgaattaatg gtttctcgct tgacttctca	600
15		
	<210> 311	
	<211> 528	
	<212> DNA	
	<213> Enterococcus faecalis	
20		
	<400> 311	
	cgagacaag aaagacaaca caacgaactc ttctagcgta gcatcttcag aaacgaaaaa	60
	atcaactgaa tcatcagcac cagcgaaaaa agttgccggt ggcgatttaa aagatggtac	120
25	gtataaatta gaagaaaaaa atgaaaaaaa tggttaccgt gcagtccttg aaatgactgt	180
	aaaagacggc aaaatcactg aatctaaata tgacaacatc aatgctgacg gcaaactctaa	240
	aacagaagac actaagtatg aagaaagcat gaaagcaaaa tctgggtgttg gacccaaaga	300
30	atacatcaaa caattaaacg attcttttgt taaagcacaa agcgcaagcg gtgtggaagt	360
	agtaactggg gcgactcatt catctgaatc attccaaaac taocgacaac aattaatcca	420
	agcagcacaa gctggtaaca cagacacaat cgaaatcgac aatggggcaa cattgaaaga	480
35	tggtacgtac tcattgaaag aaaaaaatga ctcaaacggc taccacac	528
	<210> 312	
	<211> 451	
	<212> DNA	
	<213> Enterococcus faecalis	
40		
	<400> 312	
	tttccacttt taggagctat ttttatttta gctagttgtg gcataggaaa agatgctgtc	60
45	acagatacta agtacaaagt tagtttgcag caagctgctg aaatctatga aaaagaagct	120
	ggcaacagca aaccattagt aaatgtccaa tttgatacag aaccagcaag tgactacagc	180
	tatatcttta ctaacgatac agaaacactt tacgtgaatc ctgaaacagg aaaagtcacc	240
50	aaaaaacttg aagcaaatca acttggcgaa aacgagacag ccttttcagc tgctgaagtc	300
	aaagaattag gcgctgttaa cgacgtttta gccaaagcaa aaaaagaagt tggaggactt	360
	tctccacgta ttttgacttg gaagttaacc aaaaataaca ataaacttgt ttatacagta	420
55	gatgttaaaa cgactacggc agatgaaaaa g	451

EP 1 770 171 A1

5 <210> 313
 <211> 274
 <212> DNA
 <213> Enterococcus faecalis

 <400> 313
 caaaaccaac agaagaagaa ttaaaacaaa ccttgacgga tottcaatat gccgtcacac 60
 10 aagaaaacgc aacagaacgc cctttttcag gagaatatga tgactttttac caagacggaa 120
 tctatgtaga cattgttagt ggcgagccgt tgttttagctc cctggacaaa taogatgctg 180
 gttgtggctg gccatccttt accaaaccaa ttgaaaaacg tggcgtcaaa gaaaaagctg 240
 15 attttagtca cggcatgcac cgagtagaag ttcg 274

 20 <210> 314
 <211> 564
 <212> DNA
 <213> Enterococcus faecalis

 <400> 314
 ggcttagttg tcagttgttg ggcttttttt gcccaaccta ctgtgactca cgcagaagaa 60
 25 gatattaccg cgattgctaa aaaaatgggg acgactttga aagcggatgg cattcccaaa 120
 gcagccatcg ttgttgatgc tgattctgga gaaattctct ggtcgcagca accagattta 180
 gcgtggaatc ctgccagtat tgccaaagtg atgaccatgt acttggcctt tgaagcaatg 240
 30 gagcaaggaa aatttacaat ggatacgact gtgactgcta cgcaaaaaga tgtcgatatt 300
 tctaaaatat atgccattag taataacaaa attacgttag gtgttgctta tccagtcogt 360
 gaactgttaa aaatgattgc tgtcccctct tctaatgttg cgactctcat gttggcaaac 420
 35 ttaatttcag ggaaccagcc tactgacttt gttcatttaa tgaatcaaaa agcggctgaa 480
 ctagggatga caaatactac ctattacaac tgcagtggag cgcaagcaag tgcccttaac 540
 ggctgtatc aaatgcaagg aatt 564
 40

 45 <210> 315
 <211> 478
 <212> DNA
 <213> Enterococcus faecalis

 <400> 315
 gtttgattgt tgcgaggta aagaataatg ttataggcaa gaatggtaat ataccatgga 60
 aaataaaggg agaacaaaag caatttagag agttaacaac gggtaatgtg gttattatgg 120
 50 ggcgaaagtc ttatgaagaa atcgggtcatc cgttgcctaa tagaatgaat attgttgttt 180
 ccaccacaac agagtatcaa ggagataatt tagtttcagt taaatcatta gaagatgcat 240
 tattattggc taaaggacga gatgtatata tatctggtgg atatggacta ttttaaggaag 300
 55 ctttgcaaat agtagataaa atgtatatca cagaagtaga tttaaatatt gaagatggag 360

EP 1 770 171 A1

atacattctt tccagaattt gatataaatg attttgaagt tttgataggg gaaacacttg 420
 5 gtgaggaagt gaaatatacg agaacatttt atgtaaggaa aatgaattg agtagatt 478

 <210> 316
 <211> 380
 <212> DNA
 10 <213> Enterococcus faecalis

 <400> 316
 ttttactaaa ccattaggtg taaaattacc cccatttttt gatattgcac attttgacgc 60
 aatggctgaa attttaaata aattcccttt agtttacgtg aatagtatta atagcatcgg 120
 15 taatgggttta tatattgaca gtgacaagga agaagtggtc attaaaccaa aaggaggctt 180
 cgggtggactg ggcggcgaat atgtcaaacc aacagcgtta gccaatgttc gtgcgtttgc 240
 gcaacgtttg aaaccagaaa tcaaaattat tggaacgggc ggtattacat gtggaaaaga 300
 20 tgtttttgag catcttttat gtggtgcgac attagtacaa gttggcacac aattgcatca 360
 agaaggtcca caagtttttg 380

 25 <210> 317
 <211> 537
 <212> DNA
 <213> Enterococcus faecalis

 30 <400> 317
 catgtattgg ttgttagata gggagtatga aaacttatat aatagtactt ataaagaaaag 60
 tgcgcattta agagtgcaaa ttgcagacga tttgtcaaatt ttaccattat cctatttttc 120
 aaaacataat ttatcagatt tatctcaaac tatcatgtct gacgttgaag gtattgagca 180
 35 tgcatgagat catgcaatac ctaaattcgg ttgtatggct ctgtttttcc cttttatttc 240
 agtgatgctt ttggttggtg atgtcaaaat gggattagct gttatttttc caacgttatt 300
 tagttttgtc ttaattctgt tatcaaagaa atcccaaacg aaagccaata ctaaattatta 360
 40 cgatactttg agagaaaact cggaagaatt tcaagaaact attgaattgc agcaagagat 420
 taatagcttt aatctatcta aaaaagttca agacagactt ttcaaaaaaa tggaagagag 480
 45 tgaaaggatt catttaaagg tagaattaag tactttttca gtcattggct tatectc 537

 <210> 318
 <211> 606
 <212> DNA
 50 <213> Enterococcus faecalis

 <400> 318
 gatcaggaag atcaatcagg aaaaacacaa tggacaaagt attatctaac cgtttatttt 60
 tctggcttat ttaattttct gatgattctg attttatcag ttttatttgg gacgttaagc 120
 55 gaaaccttta ttgtatacgt cgtactgatt tttttacggc ctgtcgcagg ttggtggcat 180

EP 1 770 171 A1

	gcaaaaaacta aatggctctg tctctagaa agcattgtta tctatgtcgc cataccattt	240
5	gtattgaaaa attcttctgt gagcttaccg tttatttata aaattctatt gatttgcctc	300
	ttagtcgtat tattttattg gtatgcgcca caaggaacag caattgaacc tgttcagcca	360
	tctgatttaa acgtgctcaa aaagcaaagc cttataaggg tgtgtttact tattttatgt	420
10	agtctgtttg tcaaagaaaa gattgcttca gtaatactct acggtctcgt catccaaggt	480
	ctgatgatac tccctgtaac aaaaaattta attgaaggaa gtgtttttat gaaatttggt	540
	aaaaaataa ttaaaaatgt tattgaaaaa agagttgcaa aagtcagtga tgggtgtgga	600
15	actaag	606
	<210> 319	
	<211> 507	
	<212> DNA	
20	<213> Enterococcus faecalis	
	<400> 319	
	gttgggtac tcttggttga tttatgcgct gacagtcggt gtttttacag gatttttact	60
25	cattcacaaa aagagggtct caatttttaa agcgatattt ttatccgttt ttacattgct	120
	tatggtttcg tttatcaatt acacggagca aacgatttta agtggttttt ttcaacagat	180
	ttatcaaaat aaattattat ggattgcctc aaatgttctt ctgttgctta taaatatctg	240
30	gattgcttta aaaattccca atagtgtttt ttaagatta aatcgtgtgt tagaaaatag	300
	ccgaattttt tttggttggt tacttttatt gttgattctg ttgttacttt ttgtgttttt	360
	gatttcgcca gagatttcac ctgactttat gcgaggattt gtcacggtaa atagttctaa	420
35	attggagtta ttaataagtg taggtttatt ttaattctg attggcttag tcattgaagc	480
	ttatttgga gaacaacgta tcaacac	507
	<210> 320	
40	<211> 500	
	<212> DNA	
	<213> Enterococcus faecalis	
	<400> 320	
45	ttacgttaga agaagcatac caagagtcaa aacggatgca agaattggtc aatttttcac	60
	caaataatca attgctctat aaaacagctg ttcagctaga aggattgcct cgccatgttt	120
	ctacgcacgc agcaggtgtg gtaattagtg atgaaaatct tttgaatttg gttccgttac	180
50	aaccaggatc gaatgaaatt ttattgacct aatttactat gaatgatgtt gaaaaaattg	240
	gtcttctgaa aatggatttc ttgggcttaa gaaatttatc catcattgat gataccctca	300
	cagctgttaa acgcgtctat aatogaacca ttogtttaaa tcagattcca ttagatgacg	360
55	aaacaacgct ggctttattt agaaaagggg aaacaagtgg cgttttccag tttgaatctg	420

EP 1 770 171 A1

ctggaattcg gaatgtatta agaaaattag ggccaactag cattgaagat attgctgctg 480
tcaatgccct gtatcgctct 500

5
<210> 321
<211> 407
<212> DNA
<213> Enterococcus faecalis

10
<400> 321
tttatgaagg cccaaagaat gatcttctgc taccttcaat tcaggctttt ttatcttaag 60
tgcctcaaga aataacgaat cggttttctt ttccattaaa aagacttttg agccttcctt 120
15
aaattctgag gaaaaaattt cgatgctttt ttcatgttag gttacttttt ctatctgaga 180
aagcggaagt gcttttttgc gaaaccacaa aacatctctg acaattaaag atgtttctgt 240
catattaaaa gaccgcgcaa ttccatagata agcaaacaca aaaaatggaa ccatcaccag 300
20
attactaatc aagtaaggac cattattttc caatgctaaa attaaactaa taaataatat 360
acaaaatgtg caagaccagt aaataattgt tgatgctaatt tctggct 407

25
<210> 322
<211> 607
<212> DNA
<213> Enterococcus faecalis

30
<400> 322
tttacctcac cgaccaatcg cggcaacaat tgcattgtgcc tttaggcatt gttagtaatc 60
acgaagccga atttaaagtg ctgattgaag ctttaaaaca agcgattgcc aatgaagaca 120
atcaacaaac cgttcttctc cactcagata gtaaaattgt tgtccaaaca attgaaaaaa 180
35
actatgctaa aaatgaaaag taccagcctt atttagcaga atatcaacaa ctagaaaaga 240
attttccttt gctcttaatc aaatggctac ctgaaagtca aaacaaagcg gccgatatgc 300
ttgcacggca agcattacaa aaattttatc ccaataaaaa gtagcactgt ttacttaatg 360
40
cttttccttt attaatttga taattaaaca cgtggagcaa aaattccaag tgatttttgc 420
tccacgttta aaaacagata aacggttctg totcgacttc ttottatagc caottattct 480
tttgtcgtta ttccgcaaa ttgccattg gtttagcgaag ggattgcttc aggcgctaatt 540
45
tcaatttgca tgccacgttt gcctgcagaa acaataattg cagaatattg ttgagcttct 600
tcagcca 607

50
<210> 323
<211> 521
<212> DNA
<213> Enterococcus faecalis

55
<400> 323
tctgtttacg ttagcggctt ttctacaagg aggogttact gatttaaaca cgaatcaaat 60

EP 1 770 171 A1

	tggacaagtg attcctaattg gccacgccc agaatgctggg ttgaaagaaa acgataaagt	120
	cttatcgatt aataatcaaa aaatcaaaaa atacgaagat tttacaacca ttgtgcagaa	180
5	gaaccccgaa aagccgttaa cgttcgtagt tgagcgtaac ggcaaagaag agcaactaac	240
	agtgcacacca gaaaaacaaa aagtggaaaa acaaacatt ggtaaagtcg gcgtttatcc	300
	ttatatgaaa accgattttac cgtcaaaatt gatgggcggg attcaggata ctttaaataag	360
10	tacgacacag attttttaaag cactcggctc actattcaca ggcttttagtt taaacaaact	420
	aggtgggcca gtcattgatgt ttaaattatc ggaagaagca tccaatgctg gagtaagtac	480
	agttgtattc ttaatggcca tgttgtcaat gaacttaggg a	521
15		
	<210> 324	
	<211> 531	
	<212> DNA	
	<213> Enterococcus faecalis	
20		
	<400> 324	
	ggcgacgaag ttaaagtgaa taataaacia attgtttctg gactcgatgt ttcggcagct	60
	tccgttagtg agatgatttc aaagttagta aaagaagatt tggttgagca ttctccttat	120
25	caaggggtac aattaactga aaaaggctta aaaaaagcga gtacgttaat tcgcaaacac	180
	cgaatctggg aagtcttttt agtagagcac ttaaattaca cttggaatga tgtgcacgaa	240
	gaggcagaag ttttagaaca tgttacttca cagacgcttg tgaaccgttt agcggattat	300
30	ttaaattcatc cagaattttg tccacacggg ggtgttattc ccgaagataa tcaaccatt	360
	catgaggaga aacgccaacac gttaacagac taccctgttg gcacaaaaat tcggattgca	420
	cgtgtcttag acgaaaaaga attactggat tatttagttt ccattgattt aaatattcaa	480
35	gaagaatata cgattaaaga aattgctgca tatgaaggac cgatcaccat t	531
	<210> 325	
	<211> 342	
	<212> DNA	
	<213> Enterococcus faecalis	
40		
	<400> 325	
	gatacgaaga agatagcgaa acggttcaag ataaagtcac agcgctgcca agtaccggtg	60
45	aatttgcttc tgacaacaga aaagcaaaaa gctgtgataa ggaacagaac aagtcaaaga	120
	aaatatggaa ccacgtgtag aataaacagt taaagggagg aaacaatcat gggctttatt	180
	tgggcattaa ttgtcggcgg ggtcattggg gcaatcgctg gagcaattac taaaaaagga	240
50	tcatcaatgg cattattgca atatcattgc agggtagtt gggtcaacia ttgggtcaagc	300
	catttaggca catgggacaa gcttagctgg gatggctatt gt	342
55		
	<210> 326	
	<211> 512	

EP 1 770 171 A1

<212> DNA
<213> Enterococcus faecalis

<400> 326

5 aagatggtac gtgtattcgt tttgacactc tttggcaagc aggtttgcaa gcttgttttg 60
aaacactaag tatgttagcc cctcatcatt cagcagaaat aaaaaagata ttagctattc 120
aggagcaacg ttttttgcaa aaacatttac ttgatgaagt cctttatcag gaactttatc 180
10 aggaattggc gcaatttgag gaattagtcg aacagggaat cagcagtcga tggctggagc 240
aattttttta tgattattta cgaaaaaatc tgaaaaagat cgaaccaatt ggtgatttaa 300
aacagttatt tcttgagcta aaacggaaga actataaaat tggattagca acttcagata 360
15 ctttgccagc gactatgttg attatggaat atcttggttt aacagaaatg tttgatttta 420
ttgcgacagg agatcgttac ttaccgaaac cagatgcgga catgctcaa gccttttgtc 480
agtcatgtca attgaaggcg acagaagtaa tt 512

<210> 327
<211> 643
<212> DNA
<213> Enterococcus faecalis

<400> 327

25 ttatttctgt tgagggcaaa gcggaagcag gtaaatactt gttcttcaca accttaaaag 60
gaaccgtcaa acggacagcc gtaacagcct tttctaatat ccgtagtaat ggattaatcg 120
30 ccattagctt aaaagaagat gatgagttag ttaacgtagt aacgactaat ggcaatcaga 180
agatgattat cggaacacat gcaggatact ctgtcacatt tgatgaaaat actgtacgtg 240
atatgggccc gacagcatca ggtgttcgtg gaatccgtct ccgcgaaaat gattatgtgg 300
35 tcggcgcagc gattctggat gaaaataaag aagtcctagt cttactgaa aatggttatg 360
gtaagcgtac aaagccctct gaatatccag ttaaaggacg tggcggtaaa gggattaaga 420
cagcaaatat cactgagaaa aatgggtccat tagctgggtt aaccacggtc aatgggtgatg 480
40 aagatatctt attgattacg aacaaaggcg tcattatccg ctttaacgltt gattctgttt 540
ctcaaacagg acgcgcaaca ttaggggttc gtttaatgag aatggaagat ggtgccaaag 600
tggttaacaat ggctgttgta gaaccagaag aagtggaaga aga 643

<210> 328
<211> 402
<212> DNA
<213> Enterococcus faecalis

<400> 328

50 ttgatcgttt tgacgtaatg ataaaaaaag cgaagaaaac ctaccaacgc ctagacttag 60
aagaaaaggc cactctttta gaaggacaag cagctgagat tctaccaacg ttggaaggac 120
55 cttatgactt tatttttatg gatagtgcc aatcaaaata cattgaattt ttacctgaat 180

EP 1 770 171 A1

gtttacgggt gctgccagtt ggcgcggttt tgatgggtgga tgatgtattt caagctggga 240

5 caatttttaga ccctgctgag gaagtaccga aaaaaaatcg agcaattcat cgtaaattaa 300

accaatTTTT agatgtagtc atggctcacc ctgatttaac ttctacttta gttcctcttg 360

gtgatggagt tattttaatt accaaagaga aagaaacgat ta 402

10 <210> 329
<211> 608
<212> DNA
<213> Enterococcus faecalis

15 <400> 329
agcgactaga gagcatacaa gtaaacgaac ggcggttgcc ttgtgggtgg tgacggagtt 60

agccataatg gctacagata tcgctgaggt aattgggtgg gcggttgctt tgcaattatt 120

20 atttggtttt ccattattaa ttggtgtggt gataacaacg tttgatgttt tattactgtt 180

gctactgaca aagttaggct ttcgcaaaat cgaagcaatt gtttcttggt taattgcagt 240

catctttttt gtttttgctt atgaagtggc attagcagat ccaaagtgtg gtgaagtatt 300

25 acgagggtttt attccagaca caaaaatagc gacagataaa tccatgttat ttttagcctt 360

ggggatcggt ggagcgacag tcatgcccc aactttatat ttgcattctt ccattgcgca 420

agcacggaaa ttgatcgta acgatgatgt tgagaaagcc aaagcaattc gtttcactac 480

30 ttgggattca aatattcaat taactgttgc tttogtcgta aattgtttgt tgttaatttt 540

aggaggagca ttattttatg gaaccaacag tgaattaggt aaatttggtg atttatttga 600

tgctctga 608

35 <210> 330
<211> 450
<212> DNA
<213> Enterococcus faecalis

40 <400> 330
aaattggtgc acgtatggaa aaaatgaaag acggaaattt aagtgggtatc caacgacata 60

atcaacgaga aaccaataat cattccaatc ctgatattga tattgagaaa tctcacttga 120

45 attatgactt agtcaatcct ggttcaatca attatcgga gaaaatcaaa caaatcattg 180

agagccaacg aatcagtaaa cgagcgggta gaaaagacgc agtccttggtg aacgaatgga 240

taatcactag tgataccgcc ttttttcaag agaatacaga cacacaagca ttttttaccg 300

50 atgttgctgc atatttctct gatcgctgcg gtgcacaaaa tgctgcctat gccacggtac 360

atttagacga aaccacgcc catatgcact taggaattgt gcctatgtac gaagggcgat 420

tgagcagtaa acaggtgttt agtcggcaaa 450

55 <210> 331

EP 1 770 171 A1

<211> 360
<212> DNA
<213> Enterococcus faecalis

5 <400> 331
caatggaaca aaggccactc tgatgaaacg tcgtttgctg aaaatattcc agctaataat 60
tgggaaaacg aattggccat gctctttatc ttaattaatg atggcgaaaa agatgtttcc 120
agccgtgatg gaatgaaacg aacagtagaa acttctagct tttatcaagg ttggttggac 180
10 aatgtggaaa aagatttatc ccaagttcat gaagcaatta aaacaaaaga cttccctcgt 240
ttaggagaaa tcattgaagc caatgggtta aggatgcatg gaaccacctt aggcgctgtc 300
15 cctccattta cttactggtc ccagggcagc ttacaagcga tggctttagt tcgccaagca 360

<210> 332
<211> 526
<212> DNA
20 <213> Enterococcus faecalis
<400> 332
ctgcggttaa agtcgttgca ttttctaaaa gggaaatgag tcccagataa agtgaaccgc 60
tatacaagtt tcctacgcga cgactataga tgatgcttcc ttcataacgg gctaaaattc 120
25 gttcctgttc tgcttcagtt tggtcggaga tttttgctaa taaggctttt ttgccattt 180
ttgtgtaagg aatatggaac gctaaagcat cataatctgc aaaatcaaga ccggttcttt 240
30 ttttatgttc atcccagact tgggcaaaag attggatgta ggtttcgttt gacaaaggac 300
catcgaccat aggatacggg tggcctgttg gacgcacaaa gtcatagata tcttgcgta 360
gcatcacatt atcctctttt aaagccaaga tgcgcgggttc actagcaact aacattgcaa 420
35 ccgccccagc tccttgtgta ggctcaccgc cagaatttaa tccatatttt gcaatatctg 480
ctgtacaac caagactttt ttatctggat gtaaggctac gtgatt 526

<210> 333
<211> 512
<212> DNA
40 <213> Enterococcus faecalis
<400> 333
45 atccgactat gcgtttactg aagaacaagc tgaagcaatc gttactttac agctataaccg 60
tttaaccaat acggatatta ctgatttaca agaagaagcg aaaactttag aacaacaaat 120
tgctgagtta ttgaacattt taaacaatga aaaagaacta ttctcagtca tgaaaaaaga 180
50 acttcgcgaa gttaaaaagc aatatggcaa tccgcgctta actcaaattg aagaggaaat 240
ccaagaaatc aagattgaaa cagccgtgtt agttgcgag gaagacgtgg tcgtaaccgt 300
gacgcacgaa ggctatatca agcggagtag tattcgttct tatacagcat caaaaccaga 360
55 agaaatcggc atgaaagaag gcgacttttt attatatgct ggogaagtca atacattaga 420

EP 1 770 171 A1

	tcatctttta ctagtaacaa ataaagggaa tatgatctat cgcctcgctc atgagttgcc	480
	agattttacgc tggaaagaaa ttggcgaaca ta	512
5	<210> 334 <211> 604 <212> DNA <213> Enterococcus faecalis	
10	<400> 334 aggatcaatc gtaaattggtg tatacaaaac attttgttat tcatacattt gataaattaa	60
	acaatgcttg ctcgtatatt gagaatgcag aaaaaactga agtcacgaat gataatccgt	120
15	ctgaacactt ggaacattta tttcaatata ttgtgaatga cgataagaca tacatgaaaa	180
	aattagtttc tggatcatggc attgtggatc caacaaatcc ttatgaagaa tttaaattaa	240
	caaaattaca agcagcaatt caacgaaaaa tcgggtacac attcgatcca aaatcagaac	300
20	gattgcttcc gccaacgtta acagaattag aaaaaggcaa cgcggtttta gcacaccatt	360
	taatccaatc attttctcca gaagatgatt taacgccaga aaaaatacat gaaatagggt	420
	acaacacggt gatggaattg acaggtggaa agtatgaatt tgtgatcgcc acacatgtcg	480
25	acaaagaaca ttacacaat catattatct ttagttcaac caacttaaaa acaggtaaa	540
	cctttcgctg gcaaaaagga accaaaagag tctttgaaca aatttcggat aagattgcag	600
	cgaa	604
30	<210> 335 <211> 451 <212> DNA <213> Enterococcus faecalis	
35	<400> 335 aagatggtga aacattggtg gttacaactg cagatcattc aacaggtggc ttgtctttag	60
	gcaaaggaga tcaatacaac tgggtgacgg agcctttaca tgcggcaaaa cgcacgcctg	120
40	atctcatggc agaagaaatt attaaaaatg gtaatgtgga aaaaacagtg actgagtata	180
	ttgatcttca attaatgag gctgaattga aagcagtga aacagcggcg gaggcaaaag	240
	atgttgaaaa aatcgctcag gcattaagaa agatttttga tgaacgttcg aatactggtt	300
45	ggactactgg cggacacaca ggagaagatg taaatgtcta tgcttatggc ccacaagcag	360
	aagctttttc aggacaaatt gataatacag accaagcgaa gattattttt ggcttagtag	420
	atggcacggg gcaaaaagct gagattaaag a	451
50	<210> 336 <211> 543 <212> DNA <213> Enterococcus faecalis	
55	<400> 336	

EP 1 770 171 A1

	gtttccggttc aaataaccac aaatcagaca acattttacag aggaacaatt aacggattat	60
	tggcagtttg ccttggttaa tagtcagtgc aatacaccgt tagttcagaa agtcctaaaa	120
5	acacagacac cacaatttga agatcggaaa attatcttac ctggtgataa tgaagcagtt	180
	attccttata tgaagcaaca atattttacca attattgagg aactttatct ctcttatggg	240
	tttcctaaat ttcatattga accaaaaatg gatcaacagc aagctgcaga agtggtgaaa	300
10	aagtttgaag agcaaaaatt agaacaagcc gcagcctttc aacaacaagc tgctgaatcg	360
	cttggttaaac atgaacaaat gaaaaaagaa aaacaacaac aagcgctgc gtttgatggt	420
	ccaattcggt taggtcggaa tattcccaat gatgaacca ttatgccc atgggaaatata	480
15	ctggaagaag aacgtcgtat aacgattgaa ggctttatct ttgataaaga agtgcggtgaa	540
	ttg	543
20	<210> 337 <211> 578 <212> DNA <213> Enterococcus faecalis	
25	<400> 337 aattgcagga gggtcacaac cagagatttt acagctagtt aaaaaagcac taaaagaagc	60
	cgagcaaccg ttgcagttta ttgtatttga tacaaatgaa aatcttgata ctgaaaatct	120
	ctggaaatat gttcattgct cagatgagcg cgcggtagca caggaagctg tcagtttagt	180
30	tgcaaccggt caagcacaaa ttttattgaa aggaattatt cagaccaca cattactaaa	240
	agaaatgttg aaaagtgagc atcaattaaa aaataaaccc attctttccc atgtagcaat	300
	gggtggagctg cctgcgggaa aaaccttctt gttaaccgat tgtgcgatga atatcgcccc	360
35	cactcaagcg accctcattg aaattgttga aaatgctaaa gaagtcgccc aaaaattggg	420
	actgcaccac ccgaaaattg ctttggttaag cgcagcggaa aatttcaatc ctaaaatgcc	480
40	ttcgtctggt ttagcaaaag aagtcacggc acattttaat aatcaacaag aggctacggt	540
	ttttgggccc ctttcgcttg atttagcgac ctctgaag	578
45	<210> 338 <211> 320 <212> DNA <213> Enterococcus faecalis	
50	<400> 338 aatgcgtgat cagggtgtat gataaaactc ttggaagag gcagaatttt gaaagttgca	60
	tatgcaagag ttcatccat tggcaaaact tggaaacggc aattcaagag ttaaaaaaat	120
	taggagcgaa aaaaatattt gtagagaaaa aatctggcgc aagtattgaa caacgactaa	180
	tttttacaga agctatctat tttgtgagag aatccgatat ttttatggta gaagccattg	240
55	accgattagg cagaaattac gatgaaatta ttcagacggt taatttattg aaaaataaaa	300

EP 1 770 171 A1

	atgttcgact cataattaca	320
5	<210> 339 <211> 693 <212> DNA <213> Enterococcus faecalis	
10	<400> 339 ctcaacagct tcaacaatcc attcaaattt tacaatttaa tacggaagaa ctggctgcct	60
	ttgttgaagc gaaagcacta gagaatccat taattgattt acaagtagac acgcagtaca	120
	ccacagattt tccgataact agtcgttctt acaccaacca agacgaagaa aataattata	180
15	tgaatcaaatt tccagactat catattatcat tatttgagtc ttttaattgat caaattcatt	240
	tgaattaccg cgatacatac ttgcgaacat tgggtattggt ttttagtagaa tatatagacg	300
	tgaatgggtta tttaaagatt tcgttagaag aagcggcaga gaaaaccgaa gcaagcgcca	360
20	ttcaaattgct agatgcatta actttgttac aacagctaga tccagcaggt gtgggggcac	420
	gcaatttaca agaattgtttg atgctacaaa cagaacgaga cgataccgcg cctaacttag	480
	cgatatattt attggaggaa gagtttgatg ccttagtgag tcgtaaatgg ggcccgttag	540
25	ctaaaaaatt cgggattgaa ttagcagaaa ttcaattgat ttttgattat atacaaacgt	600
	tatcgccagc gccagggaat atttttgatg cgaccgagga attgtatatt cgaccagatt	660
30	taactgtccg aatcaaggaa gatcgaatag tgg	693
35	<210> 340 <211> 210 <212> DNA <213> Enterococcus faecalis	
	<400> 340 aggttttagaa gtgggggagt ttgtacacac gctaggagat gccacttat atcaaaatca	60
40	tgtggaacaa atgcaagaac aattatcacg agaagttcgt tctttcccaa cgctcgtttt	120
	gaatccagac aaggcttctg tttttgattt tgatatggaa gatattaaag tagaaggcta	180
	tgacccacat ccaacgatta aagcgccgat	210
45	<210> 341 <211> 504 <212> DNA <213> Enterococcus faecalis	
50	<400> 341 aacgcacatc tgaaagctac gaaaaaactg tcaaccatat gaaagatgta ttgaatgaaa	60
	tctcttctcg catgcgtaca cattcagttc catggcatac agcaggtaga tattggggac	120
	atatgaactc agaaacatta atgccttctc tattagctta caactttgca atgctatgga	180
55	acgggaacaa cgttgccat gaattctctc cagcaacttc tcaaattggaa gaagaagtag	240

EP 1 770 171 A1

	gacatgaatt tgctcacttg atgagctaca aaaatggttg gggacacatc gttgctgatg	300
5	gttcttttagc taacttagaa ggcttatggg atgcccgtaa cattaaatca ttaccatttg	360
	ctatgaaaga agtaaaacca gaattagttg ctggcgaatc agattgggaa ctattgaaca	420
	tgccaacaaa agaaattatg gacttattag aatcagctga agatgaaatt gatgaaatca	480
10	aagctcattc agctcgttca ggta	504
	<210> 342	
	<211> 400	
	<212> DNA	
15	<213> Enterococcus faecalis	
	<400> 342	
	atggaggggtg ataacatgaa tatcattgac gagctagcat ggcgatgatgc aatcaatcaa	60
20	caaacaaaacg aagaaggact aagagaactt acagaaaata cgagcatttc gctatattgc	120
	gggtgctgatc caactggaga tagcatgcat attggacatt taattccttt tatgatgatg	180
	aaacgattcc aattagcagg tcatcaccca tacattttta ttgggtggcgg aactggaaca	240
25	attgggtgacc caagtggacg aacaactgaa cgtgttttac aaacgatgga agctgtgcaa	300
	cataatgtgg acagtctttc aaaccaaattg aaaaaattat ttggtaaaga tgctgaggta	360
	acaatgggtga acaactacga ttgggttatca gaactatctt	400
30	<210> 343	
	<211> 585	
	<212> DNA	
	<213> Enterococcus faecalis	
35	<400> 343	
	caggaggaac attggttggt cttcacaaaa atcaaccagt aactattacc tatggcaatt	60
	tgaatgctag ttatttgggt aaaaaaattg ctagtgtgta attccaatat acagtgaagg	120
40	ccacacctga ttcaaaaggc cgattgaatg ctttcttaca tgatgatcca gtggccacaa	180
	ttgtctatgg aattaacatt gaccctcgta caaagaaggc tgggtgctgag attgaaatgc	240
	tcgttcgctt ctttggagaa gatggcgaag aaatcttgcc aacgaaagag aatccatttg	300
45	tatttttcagg tgcttcatta aattcacgtg gtgaaaacat tacgtatgag ttcgtaaaag	360
	taggaaacac ggatactgtt catgaaatta atggatcaaa agtagctcgt catggaaata	420
	aagtttattc taaaacggat attgatgtag ggaogaatgg gatttcaata agtgactggg	480
50	aagcagttca aggcaaagaa tatattggcg caactgttat ttcaacacca aatagaatta	540
	aattcacttt cgggaatgaa attgttaaca atccagggtg tgacg	585
55	<210> 344	
	<211> 544	
	<212> DNA	

EP 1 770 171 A1

<213> Enterococcus faecalis

<400> 344

5 cgacagaact tgctaaagta gatccaaaaa cggtaacaaa acaagggatt cgagatacct 60

ttgatgcaga aaaagtgcag attgatttat ccaaagtgaa agtttatcaa gcagacgcaa 120

gtctaaacga gaaagactta aaagctgttg ctgcagcgat taattcagga aaagccaaag 180

10 acgtgaccgc ttcttatgat cttaatttag accaaaacac cgtcacagca atgatgaaaa 240

ccaacgcaga cggctccgtt gtttttagcaa tgggggtataa atatttactt gtcttgccgt 300

ttgtagtgaa aaatgtagaa ggcgattttg aaaatacagc tgttcagctg acaaacgatg 360

15 gtgaaacggg acaaaatata gtgattaacc atgtgccagg tagtaatcct tccaaagatg 420

taaaagcaga taaaacggg acagttggca gtgtttctct acatgataaa gatattccgt 480

tacaaacaaa aattttattat gaagtgaat cttccgaacg tccagccaac tatggcggaa 540

20 tcac 544

<210> 345

<211> 341

<212> DNA

25 <213> Enterococcus faecalis

<400> 345

cttctttcgt gctttcaacc acaatagatt gctctttatc agccaacagc caatggagag 60

30 gggataacgg aagttcatca ctaaaattaa tatttactaa attaagattc ttcaataatt 120

tttttgcttc atctacagta gagcattggc ccaatacca aggaataaac tcaaatggag 180

aaacattttc ttttccctct tcaatttttt tataatctgc atagcctgaa aagtttaatc 240

35 cagccattcc taatcctttt tcatattattg catcataata aagcggataa tcagcaatcc 300

cagcagcaat tccaattatt gcaaaatgat gatctaaatt t 341

<210> 346

<211> 594

<212> DNA

40 <213> Enterococcus faecalis

<400> 346

45 aaacctggat gatagtgata ggaagtttat aggtaaatat tttaatgttt cggaagggaa 60

aaaattacca gattttaaac ctgaagaagt taatagttct attttaaaaca ttaatatattt 120

aaacaaagat tttaagtctt ttaattggcc atataaaaaa attttatctc atattgatcc 180

50 agtgaaagaa caactaggga aagatataac catagctcta attgactcgg ggattgatag 240

gcttcacct aatcttcaag acaataacct aagattaaaa aaccatgtta atgatattga 300

gtagatgaa tatgggcatg gtacacaagt tgctggagta atagacagc ttgctccaag 360

55 agtaaattta aattcttata aggtgatgga tgggacagat ggaaactcta taaatatgct 420

EP 1 770 171 A1

	taaagctata gttgatgcta caaatgatca agtagatata ataaatgtga gtcttggatc	480
	atataaaaaat atggaaatag acgacgaaag atttactgta gaagcattca gaaaagctgt	540
5	taactatgca agaaaaaata acatttcta tgttgcacga gcaggaaatg agtc	594
	<210> 347 <211> 504 <212> DNA <213> Enterococcus faecalis	
10	<400> 347 caaggagagc atagtgaatg tgctttggca tgtatcacta tgctacttaa ttattatggc	
		60
15	aatcaaagta cactagtaga actaagggaa aaatatgggg tgcccaaagg aggactaact	120
	atcaagaata ttcgtactgt ctttgacgaa tatggatttg atgtatcgac atttaaatac	180
	agtttttcaa attatttaga tcttcgcact cctgtaataa gttattggaa taatcaacat	240
20	tttgtggtca tagagaaaat aaaaaagaag aaagtattaa tcttagatcc tgcaagtaat	300
	aaacgctgga ttgatatttc agaattcaaa aaaaattttt caaatatatt aatatacgca	360
	cataagaaaa agactaaaaa agaaggcaaa aggaaacagt tttttttaa gtcatttatt	420
25	tttacaaaat tcaaaagata tttctttagt ttaataatat tatcatttgt ttcacaactt	480
	ttattactct taattcctat tgca	504
	<210> 348 <211> 562 <212> DNA <213> Enterococcus faecalis	
30	<400> 348 gttagggcac ttagcttttg gattatttaa taaagttaga ccagagtcac taatatttgg	
35		60
	gtttataaaa ttttcgtggg aaaatcagtt taagatcaga ttaaatacac agtggggatt	120
	ttttggtgga ttatttagat ataaaccaac tacgtttaat aataagaaaa ttctgaggtt	180
40	gttaaccggg ggaccaatat ttagtctttt ttttacatta accttttttg taaaattga	240
	cttttttcaa ttttttctt tttttaattt ttogatattt ttaattactg cagttccttt	300
	taattttaac gggtttatga atgatggata caatatatat aaattagtta ctaaggatta	360
45	tatttttgaa atgtattata ttgtatcaaa tagcttactt aataaatata atcagtcac	420
	tttcttaa atcaactgagg tatgcaaaat aataaaaaaa aataaagaat taccattata	480
	tgtgctaaat acattcttat tgtatgttat atatgagtat ttaatagaca aaaataatag	540
50	gaaattaaaa ctaatatacc ca	562
	<210> 349 <211> 402 <212> DNA <213> Enterococcus faecalis	
55		

EP 1 770 171 A1

<400> 349
 tggaaaattt aagtgtagtt cctagttttg aagaactaag tggtgaggaa atggaagcga 60
 5 ttcaaggtag tggagatggt caggctgaga caacaccggt gtgtgctggt gcggcgacag 120
 ctgcagcaag tagtgctgct tgtggctggg ttggtggcgg tatttttact ggagtaactg 180
 tagttgtgtc tttaaaacat tgttaaaata tactataaaa cttagttagg tgaagcacag 240
 10 tgctaaataa ggaaaatcaa gaaaactatt actctaataa attagaactt gttggtcctt 300
 cttttgaaga gttaagttta gaagaaatgg aagcgattca aggtagtgga gatgttcagg 360
 ctgagacaac tccagcatgt tttaccatag gcttaggagt ag 402
 15
 <210> 350
 <211> 562
 <212> DNA
 <213> Enterococcus faecalis
 20
 <400> 350
 agcaaagtgg taacgagaag tacgacatta aaaatttaca agcttggaaa gaaagaaaaa 60
 gtgttcttaa acaagatgat ttagactact tgattaaata taaatatgaa tcaactggata 120
 25 attttggatt aggaataaca cctattgaaa actttcctga taaagaagtt gcaattcaat 180
 acattaaaga tcaatcatgg tatatTTTTT ttgaatccat tttagattct tataatgata 240
 gtgaagagca attattagaa gtagatgcta gttatccttt tagatatttc ttacagtatg 300
 30 ctcgtttatt tttacttgat ttaaactcag agttaaatat ttgtacaaaa gaattcatta 360
 ttaatttatt agaaattcta acacaagagc ttattcactt aacaagtaaa acattagtgc 420
 tagatttgca tactttttaa aaaaatgaac ctctaaaggg aatgatagt agcaagcgat 480
 35 ttatctatta tctaaaaaaa agatttaact ctaaaaaga tataatagct ttttatacat 540
 gctatcctga gttgatgcgt at 562
 40
 <210> 351
 <211> 590
 <212> DNA
 <213> Enterococcus faecalis
 45
 <400> 351
 tagttggaat gaccgagaac gatggctcac cacgaaaaat caatttaaatt ggtttagggg 60
 aagtttttat ctataaagat catgtttag caacatttaa tgaaaaagtt gaatctttac 120
 ataatgtgaa tgggcatttt tctttcggga ttaaaacgct taccaccaat agttcgcaac 180
 50 cgaatgtgat agaaacggat ttcggaacag caacggcgac tcaacgtttg acgattgaag 240
 gagtgacca caacagagact ggccaaattg agcgagacta tccgtttttt tataaagtag 300
 gcgatttggc tggagagtca aatcaagtac gttggttttt aaatgtgaac ctcaataaat 360
 55 ccgatgtcac agaagatatt tcaattgcgg atcgacaagg aagtgggtcaa caattaaata 420

EP 1 770 171 A1

aagagagttt tacatttgat attgtgaatg acaaagaaac taaatatatt tcacttgccg 480
 5 agtttgagca acaagggtat ggcaaaattg acttcgtaac agataatgac ttttaatttac 540
 gtttttatcg ggataaagca cgctttactt cctttatcgt ccgttacact 590
 <210> 352
 <211> 648
 10 <212> DNA
 <213> Enterococcus faecalis
 <400> 352
 15 tcaacgtcac aaacaagaac ctgatatctg tgaaaatgca aatcaattga atgaagctgt 60
 aaagcccaaa accggaaaacg aaaacaaaca accaaaaata ccgaagaaaa aatctaatta 120
 tagcaagtat atattcgcat tgtttaccgc acttattcta gtaattgtcg ctactggcgg 180
 ctatatgttt tatacattaa aacagcaaga agtagaagct caagccaaat atgaaactgc 240
 20 tgtaaaaaat ctcatggctt caatccaaga agagcaagac caaagtggaa tttcaacgaa 300
 aatagatact ataaatgacg gagaaaataa gtgccttatt taccgtccag tttatgaaag 360
 25 tactgttcct tttaaaaatg caaaccagct cttagacgag cttgctcaaa agcaacaaaa 420
 gaagcatcgt gaaaaagaag tgcttacagt tgccagaata aaagcaacag caatatcttc 480
 taaaattggg cagtatagaa ttgaagcaga tagttttatc tgggatcgca gtaaggaaaa 540
 30 ttttaaaaag ccagacagta tttctgagaa agccatttat gtttccgaaa aaactggtaa 600
 agaaatcaca aataaggatt tgattccgga tgaaggaagt ctcttagg 648
 <210> 353
 35 <211> 520
 <212> DNA
 <213> Enterococcus faecalis
 <400> 353
 40 tcggaagtat tgcgtttggg gggacaacat tagcttacgc tgatgaagtg cataatagta 60
 taaatcagga tatacaagat tctggtagta caattattgg agaaaatgat tcttctacca 120
 aatcagctga gtataaaatg attcatgaaa ttgatggaac taaaattagt aacggtgaaa 180
 45 atagtaaaga aacaactaca agttcaggaa ctatactggc tgaagaagca atagaaagtt 240
 caaatcaaaa aaattcaaag acaagtgaag tcgaacagga tcttcataaa gatgtatcag 300
 gatctgaatc agtaaaacaa gtagaaactt ctgattctat aaaaaaatct gaagaatcag 360
 50 ctgttaaaac attaaatctg gatgattcac aagagaatac taattcaata actaccaagg 420
 cagaaaatga tgcgctatct acagttaatg atgaaaaagt attaaatgaa agtgatagta 480
 ttatcaaadc aattccttcg gaaacagaga atgtcgataa 520
 55 <210> 354

EP 1 770 171 A1

<211> 668
<212> DNA
<213> Enterococcus faecalis

5 <400> 354
ttgtctttgg gcttctctct tttttcttgc ctatatTTTT agtcttttga ggcttacttt 60
tttttctttt attattaacg agtacgtcag atacttcaaa aaatgattgt attcagccaa 120
gtataaataa tccaactgat gcgacagata cacctaaatc gatcgagcag tttgtaaaaa 180
10 gccataaaga tgcttacctt ttatcatgga aagcaggtgg ctttttaccg tctgctagta 240
tttctcaaac gatggtagaa aatgggttta attttactaa tccatcgggg acgtcatttt 300
15 ggcaggcaca caatatgggc ggtgttaaaa cgtcaaaaaa agaagatttt cctgtaactt 360
tagcaacatt cggccaagat tctgttgata tttctggtac aaagccaggg tcaaacgtcg 420
gtgatggcac tgggtggggc tatacctggg ttaaagacta caatgctgga attggttgaa 480
20 aagcagaatt tatggcacac cagacactgt atacaggtgc tatcaataat actgacggat 540
taagtacttt atcagctatt tattcaggag gatgggctac agaccctact tacctcatga 600
agttacaggc cacatataat agcttaggca agcagtttca atgggttgac caagaagcaa 660
25 tacagaaa 668

<210> 355
<211> 517
<212> DNA
<213> Enterococcus faecalis

30 <400> 355
ctatagattc cctatcttgt tgggtacaaag ataaataaag aaatattttt tttcgataga 60
35 atacgttaaa atatgaatag atatagatag taattatatt atctataaat agtagagtat 120
aacgatcttt tattttttga ttttctataa attttaagta gtaagaaaat ctttttcgtt 180
caaacttttc tataatctct aaatttttaa tttgaacaga attagttgaa ataagcatat 240
40 aaaaatttaa tagtaattgc tccttatcag attttagacg tactctttca attatattca 300
tgatatattc atcgatggta gagcttttat cagcaatttt ttctaattca gagtttatta 360
tatccaaatt atacacaatc actgcctcat ataaatcatg ttttgtttta aaaaagctat 420
45 atacggtagt agtgctggtt ttagcttcat tagcaatatc taaaagtttt gttttttcat 480
aaccaaattt agaaaagtgt ttcattgcgg taaatat 517

<210> 356
<211> 380
<212> DNA
<213> Enterococcus faecalis

50 <400> 356
55 atgtatgtat cttttgttct aagttgtttg cttggatttt ctgcctacag tctattaaat 60

EP 1 770 171 A1

	aggctaaatt cgttgggaatt tgtgggatgtt tggttagaca aagaaacaca aaaaatcaca	120
	ctaaaacgct gtttttatga tacgtctttc aagaaacaaa cactaaaaga gttagaacga	180
5	gtatatattcc aattaaaaga aataatcaac gtgcaaataa acaagcggtc tttaaatacg	240
	aatgacatac gtaatgtacg agaactagag gaaaaacaac aagaaataaa acgattcatg	300
	ttagacgttt tagaagatgc ttattggaaa gaattagcaa atatgccaga agaccaacga	360
10	cacttagacg attgggattt	380
	<210> 357	
	<211> 320	
15	<212> DNA	
	<213> Enterococcus faecalis	
	<400> 357	
	aaagtactac cttttattgc cttagtggc ttgttattgt tgtcagggtg tggaacagat	60
20	atgaaaaaga tattgactgc cgatgggtgt aaatggaaag tggaagaaac acgtgcaact	120
	tacacttttt ttgatgacgg taaattttca gctaattgact cagaggatag tgttagtggg	180
	acatacaatt atgatgaaaa aaataaaaaa ataacctttg acattactag cagaaactct	240
25	ttcattatgg aaaaagtaga atacaaagat aacaagatta caggggaaat tggcgaaaaa	300
	caaagaacac ttataaaaca	320
	<210> 358	
30	<211> 503	
	<212> DNA	
	<213> Enterococcus faecalis	
	<400> 358	
35	tgaacaaaaa gcacaggata gtgtaaaaga agttactgaa aatgttactc aaactatttc	60
	aaacgatcaa cgtataccag ctgatattgt taggcacgtg gatggcgata ccacagtatt	120
	aaaaattgac ggaaaagaac aaaaagttcg gtttttatta attgacacac ccgagactgt	180
40	gaaaccgaaa acaaaagttc agccgttcgg attggaagct agcaaacgca caaaagagct	240
	tttgtotact gtttcagaaa ttacgtttga atatgataag ggcgataaaa cagatcgtaa	300
	cggacgagcg ttgggctaca tattcgtaga tggaacatta ctacaaaaaa cgcttgtaag	360
45	tgaaggatta gtcgtgttg cctatgtaaa agagcctaca actaagtatt tggcagaact	420
	agagcaagcc caagaacagg ctaaaaatga gtcactcgga atctggagca taccaggtaa	480
50	tgtgacacaa cgggggttta gta	503
	<210> 359	
	<211> 220	
	<212> DNA	
55	<213> Enterococcus faecalis	
	<400> 359	

EP 1 770 171 A1

	tgatgaaaat ttaaaagaag aagcagaaca attatattgat gatttagggg taaatatgac	60
	aagtgcattt acgattttct taaaacagtc tattaatgag caagcaattc cttttatgat	120
5	taataaggga aacaaagaga ctctacaagc attaaaagac attaaagaag gaaatgttca	180
	tggtggattt tcttcogtgg aggatattaat ggaggattta	220
10	<210> 360 <211> 380 <212> DNA <213> Enterococcus faecalis	
15	<400> 360 tcaaatacac gtaagccttc tttcgtgctt tcaaccacaa tagattgctc tttatcagcc	60
	aacagccaat ggagagggga taacggaagt tcatcactaa aattaatatt tactaaatta	120
	agattcttca ataatttttt tgcttcatct acagtagagc attggcccaa taccoaagga	180
20	ataaactcaa atggagaaac attttctttt ccttcttcaa tttttttata atctgcatag	240
	cctgaaaagt ttaatccagc cattcctaata cctttttcat ttattgcatc ataataaagc	300
	ggataatcag caatccagc agcaattcca attattgcaa aatgatgatc taaatttcca	360
25	acttctogaa atgaaaactt	380
30	<210> 361 <211> 511 <212> DNA <213> Enterococcus faecalis	
35	<400> 361 cattattttc attaggggat attagagata ttcttattcct tataaattat ttttttacgg	60
	gaaagattga agacttattt cataagccgt tacatgatta tgagaaaaaa ttttcagaag	120
	atatccaaat agaacggata gatattgttat tatctcaaaa ttatgatcca gaaatttatt	180
	tatttttata tgaaaataaa attttagaat atgttgtaaa tggtaatgta caagaattaa	240
40	gtaatatgat atttaaaacta agtaatggtg ttgttctgtt ggtagtgagg gataacgtac	300
	gttctgaaaa gaattattca atagttgtat ttgagaagtt agcacaagca gctataaata	360
	tgggaatgga cttaataaat gcatatcaga gtogagatag ttttataagg aaaaatgaac	420
45	tatgtataaa tttaaaagaa gtattaaaag ttagagatac tgctatagta ttttatacct	480
	ctgaaatagg aaaagctaaa gtaaggaatc t	511
50	<210> 362 <211> 526 <212> DNA <213> Enterococcus faecalis	
55	<400> 362 ttgcgatttc tgtttagtag accattattt ttgtaatagg actttatggt agtaaaataa	60

EP 1 770 171 A1

	aaaaataaat cacaattaag gttctggttg ttattaatct atctcatgaa gcattagatg	120
	aattagttct agaagtacct gttgtactag ttaaaaatac tgttaaataca aattttttgt	180
5	ttaaaaagaat cattaagttg gtgcctaact ataaaatcaa attgactaaa atccaataac	240
	attgggggat actctgtaaa tcgtgtgtcg cagtacgtta gtcttgtaat aaatagatct	300
	taattaggag gggtttctat gaaaaatatt ttactttcta ttctaggggt attatctatc	360
10	gttgtttctt tggcgttttc ttcttattct gtcaacgcag cttctaataga gtggctcgtg	420
	ccactgggca aaccatatgc gggaagatat gaagaaggac aacaattcgg gaacactgca	480
	tttaaccgag gaggtactta tttccatgat gggtttgact ttgggt	526
15		
	<210> 363	
	<211> 505	
	<212> DNA	
	<213> Enterococcus faecalis	
20		
	<400> 363	
	aatcaagccg ctgaaaagaa agaaaaatta gcaattgtga caacgaactc gatcttatcc	60
	gatttagtga aaaaagtgtg gcaagacaaa attgagctgc atagtattgt gccaatggg	120
25	acagaccctc acgaatatga accgttacca gaagacattg cgaaagcttc tgaagcggac	180
	attttattct ttaacggctt gaacttagaa acaggcggaa atggctgggt taacaaatta	240
	atgaaaacgg ccaaaaaagt tgagaataaa gattactttt ctacaagcaa aaatgttacg	300
30	ccacaatatt taacaagtgc cgtcaagaa caaacagaag atccgcatgc ttggttagac	360
	attgaaaatg gcatcaaata tgtagaaaac attcgtgacg tgttagtaga aaaagatcca	420
	aaaaataaag atttctatac agaaaacgcg aaaaattata ccgaaaaact tagcaaacta	480
35	catgaggaag ccaaagctaa atttg	505
	<210> 364	
	<211> 557	
	<212> DNA	
	<213> Enterococcus faecalis	
40		
	<400> 364	
	aaatgggtga aggaagatta gcaaattatt ctgcttcagg aaatacgttt caagaaaatc	60
45	cgggatatac gaagaattat aatttctcgg atttacaatt caaccctaaa gcaataactg	120
	gtgatgtgtt acagggaaat acaattgatt ttgaggttta tgggaaacat aatattgcag	180
	cttcaactgc aaactgggaa attcgtcttc aattagatga acgattggcc cagtatgttg	240
50	aaaaaattca agttgatccg aagaagggcg taggaaatag tagacgaact tttgtaagaa	300
	ttaatgattc gcttggcaga cctacaaaca tttggaaggt taattacatt cgagcaaatg	360
	atggactatt tgctggggca gaaacaactg atacacaaac tgcctctaac ggtgtgatta	420
55	catttgaaaa aaatttagat gaaattttta aagaatttgg tgcagataat cttaaaagcg	480

EP 1 770 171 A1

accgtttaat gtatcgtatc tatttggtaa gtcatacaaga tgacgataaa attgtacctg 540

gaatagaaag cactggt 557

5

<210> 365
<211> 523
<212> DNA
<213> Enterococcus faecalis

10

<400> 365
aggtacaggc atctttgttg gaagttcatg totatcttct tcaotcttttg tagccgcaga 60

agaacaagtt tattcagaaa gtgaagtttc aacagtttta tcgaagtttg aaaaggaggc 120

15

aatttctgag gcagctgctg aacaatatac ggttgtagat cgaaaagaag acgcgtgggg 180

gatgaagcat cttaagttag aaaagcaaac ggaaggcgtt actgttgatt cagataatgt 240

gattattcat ttagataaaa acggtgcagt aacaagtgtt acaggaaatc cagttgatca 300

20

agttgtgaaa attcaatcgg ttgatgcaat cgggtgaagaa ggagttaaaa aaattattgc 360

ttctgataat ccggaataa aagatcttgt ctttttagct attgacaaac gtgtaaataa 420

25

tgaagggcaa ttattttata aagtcagagt aacttcttca ccaactggtg accccgtatc 480

attggtttat aaagtgaacg ctacagatgg aacaattatg gaa 523

<210> 366
<211> 400
<212> DNA
<213> Enterococcus faecalis

30

<400> 366
ctggttcaaa agaagccatt gatgcccgcg ttcatttaat taaaaaccaa atcggcgaaa 60

35

caacgtctga ttttgatcgt gaaaaattac aagaacgttt agctaaatta gctggcgggg 120

ttgctgtcgt taaagtcggt gctgcaactg aaacagaatt aaaagaatta aaattacgaa 180

40

ttgaagatgc attaaacgca acacgtgccg ctgtagaaga aggcattggt tctggtggtg 240

gtaccgcact tgtcaatgta attggtaaag tcgctgcgct agaagctgaa ggcgatgtgg 300

caacagggat caagattgtc gtctgtgcat tagaagaacc aatccgtcaa atcgtgaaa 360

45

atgctggtta tgaaggatca gtgattgttg acaaactaaa 400

<210> 367
<211> 264
<212> DNA
<213> Enterococcus faecalis

50

<400> 367
gatcgcgtcg taattagagt cgcgaaagaa gaagaaaaaa ctggttgagg aattgttctt 60

gcacccgttg cacaagaaaa accacaaaca ggtgaagtta tcgcagtagg tgaaggctcg 120

55

gtgcttgaat atggcacaaa agttccgatg gaagtaaaaa ttggtgacac agtaattgtt 180

EP 1 770 171 A1

gaaaaaatatt caggaacaga agtgaaatac gaaggcgtag aatacttaat tgtatcagcc 240
 aaagacatta ttgccactgt tgaa 264
 5
 <210> 368
 <211> 505
 <212> DNA
 <213> Enterococcus faecalis
 10
 <400> 368
 atctcgcgga acaattagat agtattcttt tacaagtcag tgaagaagat gaactaatta 60
 tttcagatga tggttctact gatcatacgt tggaaatfff gagaacgtat gcagcgaatt 120
 15 atccccaat tcaattgtta caaggtccag ggcaaggagt gattgctaatt tttgcatttg 180
 cgcttacgca tacgaaaggc gaagtgatat ttttagcaga tcaagatgac gtttggttgc 240
 caaataaagt aacaacagt acagaatatt ttgaaacgca ccctgacatc caagtgggta 300
 20 ttagtgactt gaaaattggt gatgcggatt tacaagttac caatccctct tattttaagt 360
 ttcgaaaagt caaaccaggg ttttgccgaa atgcgataaa aagtggctat attggggcag 420
 gtatggcctt tcgtcaagag atgaaaaacg tcattttacc cattccgcca gaagttccta 480
 25 tgcattgatat gtggattggc ttatt 505
 <210> 369
 <211> 688
 <212> DNA
 <213> Enterococcus faecalis
 30
 <400> 369
 tcggctctaa tggatatgttc cattacatta acaagcgtag cgttgccatc cgcagcattt 60
 35 gcagatgaat acgatacaaa gattcaacaa caagatcaaa aaattaatgc gttaactagc 120
 caaatgtcag atgcagaagc aaaagttgcc gcgattgaaa atgatatggt tgaaacggcc 180
 aaacaaatcg atacattaac agctaaaaag aacaagctat catcagaagt atctaaatta 240
 40 tatagtgaat tttctgattt gaatgtccgt attcaaaaac gtgaagtaca aatgacaaaa 300
 caagcagcgc atgtccaagt gaatggtcaa agtgattcaa ttattgatgc tgtcttagat 360
 gcagattcag tagcagatgc aattggctgc gttcaagcgg tctcaacaat gatgagcgcc 420
 45 aataatgaat tactagaaca acaaaaagaa gacaaagcga ctggtgaaaa gaaaacaaag 480
 aatgttgaaa aacaaattgc tgaattagaa gcagcaacaa aagaattaaa tgataaaaca 540
 50 gaatcattaa aaacattgaa gattcaacaa gaagtggcta aaaatgattt agaagcacia 600
 cgttctgaag aacaagggaa aaaagacggc ttcattaaac agaaaaaaga agcggaaaaa 660
 cgtttagcag aagaacaagc acgtcaac 688
 55
 <210> 370

EP 1 770 171 A1

<211> 500
 <212> DNA
 <213> *Enterococcus faecalis*

5 <400> 370
 gcttcattag cattagaaca atcatcagct gaaagttcta aagctggctt agaaaaacaa 60
 aaagcagctg ctgaagcaga gcaagcacgc ttagctgctg aacaaaaagc tgcagctgaa 120
 10 aaagccaaac aagctgctgc aaaaccagct aaagctgaag tgaaagcaga agcaccagtt 180
 gcctcttcat caacaacaga agcacaagca ccagcaagct caagctcagc aactgaatca 240
 agcagcgaac aaacaactga aacaactaca ccaagtacag ataatagtgc aacagaaaaat 300
 15 actggctctt cttcatcaga acaaccagta caacctacaa caccaagcga taatggaaat 360
 aatggtggcc aaactggtgg tggaacagtt acaccaacac cagaaccaac accagcgctt 420
 tctgctgac caacaatcaa tgcattgaac gttctacgtc aatcattagg ttacgtcca 480
 20 gtagtatggg atgcaggttt 500

<210> 371
 <211> 529
 <212> DNA
 25 <213> *Enterococcus faecalis*

<400> 371
 ttaactgaac aagaaaagca agcaatggaa aaagaagcat tagcattaaa taaagttttt 60
 30 cctgaaaatc aagcagatgc ggcaaaagta acggaaatga tcaatgtcaa aaatcctacc 120
 gaaaaacaaa agcaacaaat gagcgattac gttgtaggac ttatcaatga tgttcgcgaa 180
 aagcttgggt tacaaaagtt gaagatttct aaccaagcta tgaaatttgc ttgggatgta 240
 35 gcaaaatattg ataattccaa agaatttgat catgacgtaa atgcatcaa tctgacagca 300
 aaagaaaatg gttttaaaga attcctgga caaaactttt atgaaaacct aagtatggga 360
 agatttacga cacaagaagg taaagtttct atgtatgact ttgaaaagc tgctcgaaat 420
 40 gcaattgtaa gcatgttgat gaacgatgga cattctggct attccattt agattcttta 480
 ttagatgcaa atgaaacaaa catggcagtt totatttcag gagatttaa 529

45 <210> 372
 <211> 558
 <212> DNA
 <213> *Enterococcus faecalis*

<400> 372
 50 acaaccaaca gtgaaagcta cacaaacaac ggagcaagcc attactgaaa aacagcaaca 60
 agtaatagag aaacaagcaa ttgtcgatca aaaacaacaa gttgctgaca ctgcgaaaaa 120
 agaaaaagac accattgatc aatctgttaa agaccaacaa gcagtggctg atcaaaacaa 180
 55 agacgcattg gttcaaagtc aacaagcagt gactgaccaa caagcagttg tagacgaagc 240

EP 1 770 171 A1

	taaaaaagtc gtggatgaag caacaccttc agccattgaa aaagccaaag agcaagtggc	300
	tactgatata caggctgttg atgaccaaca aaaagtagta gagcaagctc aaacagacgt	360
5	taaccaacaa caagctgttg ttgatgaaaa agcaaaagaa acgactgctg cttaaagtga	420
	aaatgataaa gatcaacaag cagtaacagc tgcaaaacaa gaacaagtca agcttgaaga	480
	attagcgaaa aatgcggaag cggaaaaagt aaaggcagaa aaagaacaag cagcaaaaga	540
10	agcagaattg gctaacaa	558
	<210> 373	
	<211> 687	
15	<212> DNA	
	<213> Enterococcus faecalis	
	<400> 373	
	catgggtggc tatttcattc gtgaattgga agccactaca atttccgatt ttaaaaaaaaa	60
20	tatggattcc caagttgtcc aattgtcaaa cacgttaagt acgcagatga gcaacaaaga	120
	tctcgaacgt agtgacgttg atgcaaattt aaaaaagcg ttatctgatt tttcaaattc	180
	agatatttct gaagcgagaa ttgtcgatga taaagggatt attcgggcaa ccaatgattt	240
25	aaatcaacaa aatattattg ggaaaaagaa tgattatcgt gatttaaattg actttacgag	300
	taaaaaatat caagcttttag ataattgataa acgcgtgtat gtgaatgtcc agccgattca	360
	atcgctact ggagaaacag tgattggcgt cctttatgtg aaaagtaatt tagaaaataa	420
30	ataccaagaa attaccaaca cagcaagtat ctttttact gcttctatta ttgccgcagc	480
	aatctcgatt attgtgactt tactgattgc acgatcaatc acgaagccga ttggtgaaat	540
	gcgcgagcaa gccattcgaa tcgctcgtgg tgattacgct ggaaaagtag aagtccatgg	600
35	aaaagatgaa ttaggccaat tagcagaaac atttaataca ttatcagaac ggattgaaga	660
	agcacaagaa acaatggaag cagaaag	687
40	<210> 374	
	<211> 534	
	<212> DNA	
	<213> Enterococcus faecalis	
45	<400> 374	
	tatcttagct tcgcaaccag ttactcgttt taggaatgct tttttcaatg aaacggaaga	60
	tatccaaacc aatgaagaca gtcaagactt aacctacacg agtaaagaag aacgattgtt	120
	tgcagaagaa aaactgggaa aaattgattt taaagggacc ttgccagaag agaataaacg	180
50	ggactcaatc tataatcaaa gcttttctta tgtaaaacgt ttaggaacca atatggggaa	240
	tttgcgttac ttgatcgaa cgaaagatag tgtcaattat cggacttttg tggaaggttt	300
	cccagtgttc agtaatgatt taaaaggcca agtggatatt cgcacacga acaacgatgg	360
55	tgctgcacca agcgtaacca ttaacacaag tgtgaatacg atccaagtgc cgattccttc	420

EP 1 770 171 A1

	agaagaagaa gtgacgctgg aaagcacgga aaaattgatt aagcgtttag aaacggctgg	480
5	tgctaaaaag gaaaaaatc aatcggctgt tatcggttat acgtggcaga caat	534
	<210> 375 <211> 547 <212> DNA <213> Enterococcus faecalis	
10		
	<400> 375 gagcaacgtc tcttcttcca gccaaacaga atcgattgaa agtcgggttg aaaaagataa	60
	catctcgtat aaagggacac tttcttcaga acgattggaa ggttattatt taagtggcga	120
15	acaaaccaat tttctgctg ctttaaaaat ccaacgtgaa aagaataaaa attttttgag	180
	aaatgggctg caaattgctg ataatacttt aacgagtgt cctagtaaaa actattttat	240
	tgatcctaag aaaattgata aagattttaag taccttttta aatgaaaaaa atgctttatt	300
20	attcgggagac gaatatcaat acttaccaga attttctcat ttaaaagagc cgacggcaga	360
	aattgtggct gcacaatcgt ataaaggaat tcctttttaga gacgacacgg caaaattaag	420
25	tatttttagca gattcgtcag gtgaattatg gcaaattagt aaatattcgc aaacgcacat	480
	tgaaaatatt gaagagttac gagacaaaac ggatttatat tccaatcgtg atgcgataga	540
	cacgctc	547
30		
	<210> 376 <211> 224 <212> DNA <213> Enterococcus faecalis	
35		
	<400> 376 ttcatcgcaa taatcgttcc tttgttggtc taacggatac aggttattgt agcgatcata	60
	ttcgtggtac gattgaaaat gcagatgctt atttagtoga aagcaatcat gaaattgaaa	120
40	ttttgcgagc aggaccttat ccatggagtc ttaaacaacg gattttagga gataaaggcc	180
	atttatccaa tgatgatggt gctcttggtg tggcggatgt gtta	224
45		
	<210> 377 <211> 500 <212> DNA <213> Enterococcus faecium	
	<400> 377 tcttcatttg ttgaatatgc tgttttaagt attcgatgcg atattcatca tgtatgtttt	60
50	tatcatctgt caaaacatct atggcaccta atccattttc tgtaattatg ataggagtc	120
	catattttct ataagtgtaa ttcagcagat accgtaaacc cgtcggatca atggtccatc	180
	cccattttact agtcacaaga tacgggtttt gaagaccgcc aaataaggca ctcttttctt	240
55	cagctgctcc ttcgtacttc gcaacagatg atgcataata gttcatacca ataaaatcaa	300

EP 1 770 171 A1

gtgttccttt agagaacata tatattatcat tctctgttat ggtcaacttt attccttggc 360

5 ctgcatattc attgatttta tagtctggaa actttcctgt gcacatagca tctatttgat 420

agaaatctcg atccatttgt ttaaaagcat tcatcacatt tgttggattg caatctactg 480

gataaacagg ttcgattcca 500

10 <210> 378
<211> 665
<212> DNA
<213> Enterococcus faecium

15 <400> 378
attattgtcg cctctttccg ctacgcgatt aacatgaatc atcaaataag tgtattcatc 60

ttgagataaa taggtgttga actttccttt tacatatatt tctatctttt ctacagctgt 120

20 atatgcttta gggatatagtt tttttacttg ttcaaataac tgagattcat tttcaacgta 180

tgcttgtttt tttcttaatc gttcaataaa atactgtaaa tgtgtcacta gcctcatgta 240

gttgatgctc tcttcgtcaa tagataaact aaaatgatat ttgatgatat tcaacatgtc 300

25 tcttagtgtc tccatatctt ctatctgttc atcaaaattg acctgatttt cttgaagatt 360

aacaaagtgt aaggcaattg aaacagcttc atctgtggga aaggaatgat taaaatattt 420

cttcatcatt tttaaagctt ccaaaccgat ttgttaataa actggataaa actttttaac 480

30 ttcccaaaag agcggacttc taagatattg tcctttttct gagcgtttca atgcaaagga 540

gagatgatct aataaagcta aataaagata atcatttgct tttttaccga tttccttttc 600

tccataacta acgagctcgt tgatcataga gatcagtcta tcatcagaat gcgataacaa 660

35 atagc 665

<210> 379
<211> 504
<212> DNA
40 <213> Enterococcus faecium

<400> 379
ctcctgatcc tcttcttgtg cagggacgcc taagagataa gcagctacag ctgatccagc 60

45 aaaactaatc acgactgccg ctaacataaa ccagaagttc atgaaatctc cttcacctat 120

atacgctggg aggccaaata aacccaagc aacagaataa gctttaacac tagtcaaacc 180

agcaaataat ccaccaagtc ctctccaat cattactgca acaaattggc gacgatattt 240

50 aacaaagaca ccatagatag caggttcagt cacaccaagt actgcagaaa gtgttactgt 300

cccaataaat tgtttttgtt ttaaattccg tgttcttaag aaatacccaa gcattgctcc 360

cccaacagca atatctgaga ttgtacatga agatataaat gcagggtcac acccatttgc 420

55 tgcaattaga gaagctacaa ccggcatgat aaagtttcct gcgccaaca ttataataaa 480

EP 1 770 171 A1

	tggttgaaga gcagagtata acat	504
5	<210> 380 <211> 555 <212> DNA <213> Enterococcus faecium	
10	<400> 380 cggtatgaagg aagtaaagaa aagttgtcag tcgtggctac caattcgatc ttggcggaca	60
	tggtcaaaaga agtaggtaca atagatatcc acagtatccc gttcgggaaca gatccgcatg	120
	aatatgaacc attaccagaa gacatcaaaa aggcaagtgg tgcagatggt attttataca	180
15	acggttttgaa tcttgaaaca ggtaacagct ggttcgataa cttgatggaa acggctaaaa	240
	aagaagggaa agattatattt gcagttagca aaaatgtaga acctctatat ttaactagcg	300
	gtgaagaaca tacaaaagca gatccccacg catggctaga cctatctaac ggaataaaat	360
20	atgtggagga aatcgcacgt atattctctg aaaaagatgc agaaaatgcg acactctata	420
	aaaaaaatgc agaagcatat gtggaaaaac taaaagaatt agatacccca gccaaaggaa	480
	cttttgcttc tatcgaagag aacaaaaaat tattagtaac aagtgaact gctttcaagt	540
25	atttacgagc atatg	555
30	<210> 381 <211> 401 <212> DNA <213> Enterococcus faecium	
	<400> 381 aaagcgattt gttgctgaca gcaactcgta gtggaatcgt cttgatattt gtctttttct	60
35	tttataaaga attgaagatc acatcttttg atccgacaat ggcaaaggct ttttggtga	120
	acacttggtt gatccattat cttttgatgt tctttttgac attagtggct gtagtcagtt	180
	tacagacagt aggaacaatc ttggtgattg ccatgttgat cacaccagcc gccacggctt	240
40	acttgctaac gaaccattta ctgaaaatga tcattacagc tgcaggaatc ggtatgctaa	300
	gtgcagttgt cgggtgtgtt ttcagtatag ttacattggc catcagagct acgatcgtgt	360
	tagcatgtac cgcatttttt atccttgcta atttaatttt c	401
45	<210> 382 <211> 507 <212> DNA <213> Enterococcus faecium	
50	<400> 382 agccggtaaa ctgagtcggt aaaaaaatag cctacgtgga acaacgaagt gaattggatc	60
	tttcctttcc agtgatggta ataggcgttg tacttttagg aacatatcca tctttacgaa	120
55	ttggacaaag acctgggaaa cctggaaaag aacgtgcaag acaagctttg aaaaaagtag	180

EP 1 770 171 A1

	ggttgaaga atatgcaaaa agacagatca gcgaactatc ggggtggacag ctccagagag	240
	tttttattgc aagagctcta gccaaggag cagaatggat ctttttagat gaaccattcg	300
5	tagggattga tgcgttaagt gaacgaaaga tctttgacat cttgcaggaa ttgaagaatt	360
	caggaaaaac gattttgatc gtccatcatt ttcttcataa agtagacgaa tatttcgatg	420
	aggttattct tgtaaataaa cagctgatcg cttccgggtcc agtacaagag tcttttacat	480
10	cagaagacct tcaattgcct tatgggtg	507
	<210> 383	
	<211> 456	
15	<212> DNA	
	<213> Enterococcus faecium	
	<400> 383	
	attactcggt tcccctgaca gttggcagga catgctgatc gtagacaagg tttctaaaga	60
20	cggtatcgaa gcaaatatgg cagtcattgtc gcaaaaagga ttgattggcc gagtgatcga	120
	ggccaatacg gcttcgtcta aaatcgaatt actgtcatcc tctaataaaa gctccaatca	180
	ttttccagta cgggtatctt cggctaattg cgaagcgttt ggtttgctta aaaactatga	240
25	tgaaaagctc catgccttag tggtgaccca attaactggg gatacggata tcaaagaagg	300
	ggatgttgtc cagacatccg gtcttgagg gaattctcca gctaacttgc cgatcggtag	360
	ggttattaaa acgaaaccag atagttatgg gctggatcgg gaagtttatg tgaaacctta	420
30	tgcagaaatg tatgacgtgt cagttgtgac gattgt	456
	<210> 384	
	<211> 500	
35	<212> DNA	
	<213> Enterococcus faecium	
	<400> 384	
	atgttgaaga aagaacaat gaagtactat ctgccaatcg ttttgttctt tttgatgttg	60
40	atagatggtc atttaacaag aatgctaggg gagtgggtcga aaggcaccta tatgtcaa	120
	gcccactttc tgatattggc attattatgt tgcagtatgg cgtttgaaaa acgttatatta	180
	ctgattacca cgattgttct cggggctatc tatgacgctt actatattgg cgttatcggt	240
45	atctatgcag tagctctccc tttaattgta tggttgatgt atgtaatgaa agacgttatc	300
	catgtcaaca tctttactga atttttcagt atgatcatct ttgtcacggg ttatgaattg	360
	tttacgatgg tggtcagtt gattttttaa ttagcagtag taaataacac gtattttatt	420
50	acaagggttt taggacctac actgctgttg aacatgatta tatttgtatt attcattttt	480
	ccctttaaga aattattcag	500
55	<210> 385	
	<211> 507	

EP 1 770 171 A1

<212> DNA
<213> Enterococcus faecium

<400> 385

5 tcagtcagtt tcttgacctt ttctgtaaag aagccggcct ctactaaaa gcttcagtaa 60
tcagtcagaa ttctgttcct accgcagctg gattagcctc ctctgccagc gggctagctg 120
ctttagcagg agcttgcaat actgctctta agcttggatt agacgatctc tctctttcaa 180
10 gatttgcctg acgcgggtct ggttcagctt gccgaagtat ttctgggtgg ttctgtcgaat 240
gggaaaaagg coatgacgac ttaagttctt acgctaagcc agtccttcc gattctttcg 300
aagacgattt agcaatggtt ttctgtttga tcaacgacca gaaaaaagaa gtgtccagca 360
15 gaaatgggat gcgtcggaca gtcgaaacat ccaattttta tcaaggctgg ttagattccg 420
ttgaagggga tctatatcaa ttgaaacaag caatcaaac aaaagatttc caacttctcg 480
gagaaacgat ggaaagaaac ggactaa 507

<210> 386
<211> 508
<212> DNA
<213> Enterococcus faecium

<400> 386

25 ccaattaggt gaagcagaac ttgtgatagc cggcggaaca gagagtatgt ctcaagcacc 60
tatgtgaaa ccgtatcagt cagaaacaaa tgaatatggt gaaccaattt ccagtatggt 120
30 caacgacgga ttgactgacg cattttcaaa tgcacatatg ggattaaccg cagagaaggt 180
tgcaacacaa ttttctgtga gcagagaaga acaggatcgc tatgccttgt cgtcccagtt 240
gaaagcagca catgctgtcg aagccggtgt attttctgag gagatcatcc cagtcaagat 300
35 ttctgatgaa gacgtgttat ctgaggatga agcagttcgt ggaaatagta cattggaaaa 360
actgggcacg ttacgtacag tattctcaga agaaggaact gtaacagcag gaaatgcttc 420
cccgttgaat gacggtgcct ctgtggtgat ccttgcaccc aaagaatacg cagaaaataa 480
40 taatctgcct tatttagcaa ccatcaaa 508

<210> 387
<211> 501
<212> DNA
<213> Enterococcus faecium

<400> 387

45 gattgccttt cttttctatg caacaaaagt caccgcattc cttgaagagc tggatgcaat 60
50 ggacgatcaa ctggtttctt cctactattc aggaaattta gccgaagctc ctcatgcatt 120
aaaaaatatc aaaaaattat tcattcactt aaaaaaacag catgacatcc aaaaaactt 180
gcaactgacc attgaaagca cgattcctgc tgaacgtgga atgggatcaa gcgctgcagt 240
55 cgccacagca gtcaactcgtg ctttttatga ttacttagca tttcctttgt ctctgaaat 300

EP 1 770 171 A1

actattagaa aatgtccagc ttctcgaaaa aatcgccac ggtaatccta gtggaatcga 360

5 tgcagccgct actagcagct tgcagccgat ttattttaca aaagggcatc ctttcgacta 420

cttttctttg aacatcgatg cttttttgat tgtcgtgat acaggaatca aaggacaaac 480

aagagaagcc gtcaaagatg t 501

10 <210> 388
<211> 505
<212> DNA
<213> Enterococcus faecium

15 <400> 388
caagaacaag aaactcagca ttctatcagt gagttacttg ccctggattg gccaggctca 60

tccattgagc cattgattgc tcctgaagat ttacgtttat tgattgggtg gacgggtagc 120

20 cctgcctcta cttctgattt ggctgatcaa gttcacggtt cgagagaaga taaaatggtg 180

gcttatcagc ttttcttaaa aaacagtaca gaatgtgtca atgaaatgat caaagggttt 240

aaagaaaata atgtaacgtt gattcaacag atgattcgaa aaaaccgaca attactgcat 300

25 gatttatctg caatcactgg ggctgctatc gaaacgcctg ctttgaacaa attgtgtaat 360

ttagctgaac agtatgaagg agccgcaaaa tcttctggtg caggtggggg cgattgcgga 420

atcgtaattg ttgaccagaa atctggcatt ctctctttaa tgagtgcatt ggaaaaagca 480

30 gaaatcactc cactgccgtt acatg 505

<210> 389
<211> 585
<212> DNA
35 <213> Enterococcus faecium

<400> 389
aaattcactt actgcaccag agccgtagct gaatagaccg atgogatctc ctggctgtag 60

40 tgatttcgaa ttttccagta gagaagttag cccaggtat aatgaaccag tgtaaagatt 120

accgattcgt cggctgtaac ggatgctttc ttcatagcga gccataagac gttcctgatt 180

atcttctctt gtttggctta atacgctttg caatgccttt tttcccatct tagtatacgg 240

45 aatatggaaa gcaatcgctt gataatcttc gagtcctcga cccgacaatt ctttatgtcg 300

attccaaact ttttggaatg attcgatata cgtagaatta gataaaggac catcaacaac 360

aggaaattcg ctataatctg gacgccagaa atcatagata tcttctgtca gaaatacgtc 420

50 gtctgtttca atcgataaaa tacgcgggtt ttgagtgatc atcatcgcaa cagcaccgac 480

accttgcgtc acttcaccac cgcttgccaa gccgtaacga gcaatatcac ttgctatgac 540

tagtactttt cgttctggat gatTTTTgac atattctttc gccat 585

55 <210> 390

EP 1 770 171 A1

<211> 300
 <212> DNA
 <213> *Enterococcus faecium*

5 <400> 390
 gcatatttcg cttgatatat aggttcatac gtggtggaac aacgtatgat gtttttaggaa 60
 atagtgtgta taaatcacgt ggtctactca catttgtaat atcataccgc ttttttgctt 120
 10 caggagaaga agctctaata tcaatcctaa accagtattg tcagcgcgac tcataacaac 180
 aagttctggt gttaatggat caaaatttct ttctatacac tcgatactcg cataaaaagg 240
 cttcatgtcg attagaaaat aatcatttac tgattctttc gaataatcca gcatgaataa 300

15 <210> 391
 <211> 273
 <212> DNA
 <213> *Enterococcus faecium*

20 <400> 391
 atatttcata cccagctctt tttttactaa tataccaact acatttaata acaaaataac 60
 tagtaaacctt aatattttta gtggcataga atattcaaaa ataaataaag gcaccatata 120
 25 tgtagctatc aatataaata cagaacttac gtatttttatt attttacgga acattataac 180
 ctattacaac tccgcaaata gccatagccc ataccataga taagattttt accagcacca 240
 ccaccacatg ttgtttttat ctctttcata ctt 273

30 <210> 392
 <211> 626
 <212> DNA
 <213> *Enterococcus faecium*

35 <400> 392
 agcagttccg gtatctcttt ttttctcaga atattatttc tatgtgcttt gttacaatcc 60
 attttctttc aaaaaatagc atcatttata atatggttct ccgtatcgcg agcgaatggt 120
 40 attggctaatt ctcttgcaa acaagtgttc accacaaaat tcctaactaa acaaaaaata 180
 gcataaatta atgctcttag tcacagatca tactgtaaca gtatgatctt attttctgac 240
 aaaataagaa taccaatcat ttatggtacg acattctaag cgtaaataat tgatattctt 300
 45 ttgcagaaac attcttaatt tgtacctaaa gattgctgac taaaaaatag atagaaaatt 360
 ttcttctactc tatttaatac gttgcttgaa gttttatagt tatctattaa cattctcgtc 420
 ccctattgtc ggggataggt ttcgattaga tgaactcgaa aacgttgcta tatcaattat 480
 50 ggaaacatta ttctctgtcc agtgatggga caatccatac ttttccaatt agttatttgg 540
 tcgattcacg ggaaaaattt tatatgcagt tcattattac tactcatctt cagactgtac 600
 cgattcaaaa cattaccctt tcttca 626

55 <210> 393

EP 1 770 171 A1

<211> 508
<212> DNA
<213> Enterococcus faecium

5 <400> 393
tgaagtcctt tgtctttggt gcttagtacg ctcgggattt cttctttttg tcaaggatga 60
aatgatgttt tcaaaggatt ttggattttc attgtatcta ttatccaaaa tgttttgaat 120
10 gtttaacact aatgtcataa ctaataatgg cttattgcta gcgtctatcg aagtattttt 180
tatttccttc aatatcaatg tcatagagat agacatttaa aatctgcgac attttcaccg 240
ggatttagcc catctttttc gtcaattttt ggattctttt ttagtttcta ttggaaagaa 300
15 tcttcaactg acataattca ttttgtatgt ttatctgtcc tcttaacatt ttagtgtcaa 360
ttttaatagt gcttcacacg agaaaggat aaacatacca ataaatttgg tatgactaat 420
gaaccttgca ctgcatagta tagccatacg cggatatact atatctctta tgttccttag 480
20 agtaaaacct ctaaactcgg gtgtattg 508

<210> 394
<211> 321
<212> DNA
<213> Enterococcus faecium

25 <400> 394
tctattaaac agacacaact tatctatggg ggtaccactc atagtggaaa atattatgga 60
30 aatggagtggt attgcactaa aaataaatgt acgggtcgatt gggccaaggc aactacttgt 120
attgcaggaa tgtctatagg tggtttttta ggtggagcaa ttccaggga gtgctaaaat 180
gaaaaaaaaat gctaagcaaa ttgttcatga attatataat gatatatcta taagtaaaga 240
35 tcttaaatat tctgatattc ttgagggtttt acaaaaggta tatttaaaat tagaaaaaca 300
aaaatatgaa ttagatcccg g 321

<210> 395
<211> 613
<212> DNA
<213> Enterococcus faecium

40 <400> 395
45 ttcataagga cgatgtgttg gtttagattgg attgttcttt aatagagaat gaaaaggctc 60
agatagaaca agaaaaccaa cgtattactc aacaaataaa gatggctcag ctattttattg 120
aaagtataag taaaggaaaa aatttgtttt caacggatga cagttttggc tacagtaatc 180
50 aattaaagag catgttgtca gaaaaagaat cactccgcta cgctttgaag caaagtgaat 240
taaagtatca aaagcaatta gaagtatacg aaaagacaaa aagacaacta gaaaaacaaa 300
ttgagagttc agatagtaaa ttacaagaat ggcaacaagt acaggtagct tggagtaata 360
55 atcaatcatt aaaagatttt tcaaaagaaa tgatggcaaa ctatgagaat tggcaagaac 420

EP 1 770 171 A1

	aactaaataa tgtttctgat gatcaaaaaa atcaagtga actgacaatt tcagcaagca	480
	taaatgaaca aattgagcaa ctaaaaaaag aagtagaaca gtatcagtca gaaaaagcta	540
5	aattagttaa accaactact tctgagaatg acagaattag tcaaacggaa aaaggaaagc	600
	aagagctaga aca	613
10	<210> 396 <211> 400 <212> DNA <213> Enterococcus faecium	
15	<400> 396 attatgtgaa gatcaaatta tacaattaaa tcagttagaa cgaattattg ataatttcat	60
	tctttttcac gataaagtat ttaagatagt attgaaaaca caaagtccgt tagaagttaa	120
	aaaatacctc aaacaattcc gaccaaagca aggaatatat ttcttagata ttgattttaa	180
20	tcatagaagt aacggtatag aattagcaga agtaatcaga aaatatgatg ttcaagcaaa	240
	aatcattttt acaactactc atgatgagat gttaccgta acaataaaaa gaagagttga	300
	aacgttagga ttgttaacaa aagatcaaac actagatgag tatcgaaacg agattgttga	360
25	gttattgtta ttagcgcaag aaaggataga tgcaacaaaa	400
30	<210> 397 <211> 533 <212> DNA <213> Enterococcus faecium	
35	<400> 397 atcttgatct tgccattcca ttttttcttt accgaaaaga ttagcttttc tagtcaagta	60
	attaacaagg ggttgtttgt ttttctggat tgtatccac atgacagaca atgtttcttt	120
	cttcaaccga ttgtactcta atggtttttg tagaaaatct gtgacaccat gaagttcata	180
	gtcagaaagt ctaaaacat ctaaattgatt caaagtatcc gtgaagaggg gtgccttttc	240
40	tttccaggct tcttcccatg ctgcgaaaag tgtttctctg acttttggat ctggatcgcc	300
	catcatctta ttgaaggctt gtccagcaga taattcgact acttgtccat ottgttcgaa	360
	gggaatogaa atgctggcta caatcgtatc ataattgactg ctccaagcat ttagaccatc	420
45	taaagaaagc gtatttataa tgttttcttc agcttctgat aataattgtg agccatcacg	480
	acgaatctcg tttaaacgaa aagcaattgt ttcaaacgaa gattgagaaa gca	533
50	<210> 398 <211> 171 <212> DNA <213> Enterococcus faecium	
55	<400> 398 tgaatcttca gcaacagaag aatcaacaac agtgctgaa tcttcaacaa cagaagaatc	60

EP 1 770 171 A1

aacaacacct gcgcctacaa caccatcaac agatcaaagt gttgatacag gaaacggcac 120

aggaagtagt actccggctc caacgccaac accaacacct gaacaaccaa a 171

5

<210> 399
 <211> 519
 <212> DNA
 <213> Klebsiella pneumoniae

10

<400> 399
 aggatcattt gtctcctacg gcccgactg ggccaacgtc agcaacgccc cctacgccaa 60

ttatcacaaa accaccagcg ccagggcg gcatcaatacc gactttatga tctccggctc 120

15

cgggatcacc cgccacggta aaatcgacgc ctcgacgatg gcggtgtatg acgtggcgcc 180

gacgctatat gaattcgccg gcatcgatcc gaacaagtcg ctggcgaaaa agccggtgtt 240

gccgatgatc ggcgtcagct ttaagcgcta tctaccggc gaagtacagg agccgccgcg 300

20

cggcaactac ggggttgaac tgcacatca ggccgcttg gtcgatggcg aatggaagct 360

gcgacggctg gtgccgcgcg gcctcaccgc cgcgacgcg ccgtggcagc tgtttaatct 420

gcacgacgac ccgctggaga cgcgatgtgt cgcgccgaa catccgatc ggggtcaaagc 480

25

catgagcgag gcctacgagg catttgctaa gcgcaccat 519

<210> 400
 <211> 320
 <212> DNA
 <213> Klebsiella pneumoniae

30

<400> 400
 ctgatcaacg acgcatggtg ccgaactgtc cgccaacatg gctttattat cgggttgagc 60

35

ctcgaaggca acgaagcgct gcaggactac catcgctccg ataaacgcg ccggtcgacc 120

tggtcggcag cgctgcgcg cattgacctg ctccatcagc atcaagtggg ctttaatctg 180

ctggtggttg tgcataacga gatggcgcc cagcgggcg cgatttatga ccggtcggtc 240

40

agcctcggcg cgcgctatct gcagtttcag ccgctgatga gcgaaggcgc ggccctgcgc 300

gaaggatacc agctcagcg 320

45

<210> 401
 <211> 201
 <212> DNA
 <213> Klebsiella pneumoniae

50

<400> 401
 ccgatcgagt ccattacccc ggagattgtc gacaaagtct acaacatcaa cgtcaaagg 60

gtgatctggg gcatccaggc ggcggtcgag gcctttaaga aagaggggtca cggcgggaaa 120

atcatcaacg cctgttccca ggccggccac gtcggtaacc cggagctggc ggtgtatagc 180

55

tcgagtaa at tcgccgtacg c 201

EP 1 770 171 A1

	<210>	402	
	<211>	305	
	<212>	DNA	
5	<213>	Klebsiella pneumoniae	
	<400>	402	
	gcctgcttcg	ttgatagatt acctaccgcc ctttcgcaca acgaatggat ctcgatcgtg	60
10	gggaatctac	ttgataacgc ctacaatgcc agcctgcgtc aaccgcaggg ttcaaaacag	120
	atcgaatgcc	tgatcaacag tgatggccag gaggtgatca ttgagatcgc cgaccaggga	180
	tgcggcattg	acgaggcgct gcgcgatcgg atcttcgagc gcggcgtcac cagcagcgcc	240
15	agcaaagatc	atggtatcgg actctggcta gtaecgagct acgtggaaca agcaggcggc	300
	agtat		305
	<210>	403	
20	<211>	608	
	<212>	DNA	
	<213>	Klebsiella pneumoniae	
	<400>	403	
25	gccaccttta	ttccttcgcg gctgggtccac tatgggtctgc tgcoctgacgt ggttattgaa	60
	tccacgacca	aattctataa atccactaac atcctctatc tctatatctg ctgcatcatt	120
	gtcggcgagc	tcattgagtat gaaccgcacc acgctgattc agggctttct gaagatcttc	180
30	ttcccgatgc	tgtgcggcga agtgggtcggc atgctgggtgg gcatcggcgt cggcacgctg	240
	ctgggcatgg	agccgttcca ggtgttcttc tttatcgtgc tgccgattat ggccggcggc	300
	gtgggagagg	gggcgatccc gctgtcaatg ggttatgccg cgtgatgca tatggagcag	360
35	ggcgtggccc	tgggccgggt attgccgatg gtgatgcttg gcagcctgac ggcgatcgtc	420
	atctccggct	gctcaacca gctcggcaag cgcttccgcg atctgaccgg cgaagggcaa	480
	ctgatgccga	accgcagcca tgaaacccgc agcctcagcg agagcgaagg cgtgagcggc	540
40	aagaccgacg	ttgggaccct cgctccggc gcgctgctgg cggtactgct gtatatgatg	600
	gggatgct		608
	<210>	404	
45	<211>	490	
	<212>	DNA	
	<213>	Klebsiella pneumoniae	
	<400>	404	
50	gtcagcatcg	aggcattgct ggcggcgaaa gagcagcgtg cagcccgcca ggccgactgg	60
	ttggccatt	atcagcagcc tgttatttcc ctgaccctgg tgaccccggg ggcggtgaag	120
	gacagcattc	gctatcgtaa tatgatgggc gttgccctcc aggcctgcga tcagctgctg	180
55	tggaagcacc	gctggcaaac gctggatcgt caggtgctat ggctgccgac cgggcccagaa	240

EP 1 770 171 A1

	gcgctgtggt gcgtagcgca tccggccagc gaaatcaaag cgatgtgcag tacgctggag	300
	cagatccatc cgctgggacg cctgtgggat atcgatgtaa tctgtccgca gaacgggctg	360
5	gtgggacgcc agtcgctggg cgaatcgag cgccgctgcc tgctgtgcga tgagccggcg	420
	cacgcctgtg cgcgcagccg tcgtcacgac accgatctcg tcgtcgcccg cgttgagcag	480
	atgattgacg	490
10	<210> 405 <211> 509 <212> DNA <213> Klebsiella pneumoniae	
15	<400> 405	
	gttgttctcc actaccact ggataaaggt ctccccatc accggcgctt tgtcatcaat	60
	tccggcttgc gctttgatgc gggccggcag atcgccgcc ggacggggg tgatgcggtc	120
20	caccatggtg ttcggacagg ttgtattggc cgccatccag tcaatcaccg cctgtttgcc	180
	ggtgagctgc aggaactcga ccataccgtc gtggaaacgc tcgccgttat ggcgcacgtt	240
	atcgcagttg agcagggtca gcggccggc gttgtcgcc atgogctttt ccaggatccg	300
25	cgcgagggtg ccgtaaattg ttttgcactc gccttgacagg tcggcctgca gatcggggtt	360
	gctggtttcc agccgatggc gagtgttcag gtagtacctt ccttccgtca cggtaaaggc	420
	gataactttg gtctgcggtt ttgcccttc gttaatcagc ggctgtagcc cggcctgcca	480
30	cggtagcagt ttctggattg aggtgatct	509
	<210> 406 <211> 533 <212> DNA <213> Klebsiella pneumoniae	
35	<400> 406	
	gacttccggt ttttcacaca ccgcggcaat gggtttgccc gccgccaggc aggccagccg	60
40	cgccgcgccc agcgcgccgc cgggtctctcc gcctttgtgg gtcaccaccg gcatagcgag	120
	aatatcggcc agcagctggg ccagaaacgg gctgcggggc ccccgccca ccagcgagca	180
	ctgcgcgata ggcttccgc tctctttcaa tgcctgcagg ccgtcgttga toccaaagct	240
45	cacccctcc agcaccgct agccgagctg cgcgcgcagg ctggcggtgg tcatgcccc	300
	gaagatgcc cgcgctcag gatcgttatg cgggggttcgt tccccggaga gatagggcag	360
	gaagaacggc gcgttggtt tctctctc gcttagctcg gcaatctccg ccagcagcgc	420
50	cacctccgtg gtgccggtca agcggcagaa cactgcaaa cagctggcgg cgctcagcat	480
	gacgctcatc tggtgccaca ggttcggcag cacgtgacaa aacgcatgta ccg	533
55	<210> 407 <211> 260	

EP 1 770 171 A1

<212> DNA
<213> *Klebsiella pneumoniae*

<400> 407
5 ccagctcggg aaactttctca cgggtggtga gattctgcat atgctgcggc gtttgaatat 60
ggcgcaggga aaccagggga atcacgcccc cggtaaggca gaaggccagc gccagccaca 120
gggtgcccatt ttccccaatg tgaggaatgg taaagctcgg aatatagctg ccgaagaccc 180
10 cgatgccgat ggaatacacc gccagaacc agccgatggc cgagctggcg ttgtcgcttt 240
tgacgttatg gacaatcgcc 260

<210> 408
<211> 501
<212> DNA
<213> *Klebsiella pneumoniae*

<400> 408
20 taacggcaaa gacgctaaaa accggcaacg tcggtgtctc ttttacgggc gatggtggtt 60
ctaatacaggg cctggtcttt gaagccatca atatggccgt cgtgctccag cttccagccg 120
tctttatttt cgagaataac ggtaacggcg aaggaaccgg ccatgactac gccgtgggtg 180
25 ggctgatata cggccggcgc gccgctggct tcggcctgcc ggcagtgacc gtcgatggca 240
ccgatttctt tgccgtttat gaggcaacct cagaggcggc caagcgtgcg cgagaaggcg 300
gtggcccaag cgtcattgag gccaaagcct tccgctggca tggctatttt gagggcgatc 360
30 ccgcgtata tcgtgcggaa ggtgaagtgc aacgcctgcg tgaacaacat gatccgctga 420
agattttcac cgctaaggtc aagcaacata tcaccagga agaactggcg gcgattgacg 480
aggaagtaga agccctggtc a 501

<210> 409
<211> 535
<212> DNA
<213> *Klebsiella pneumoniae*

<400> 409
40 cctataatat ctttgccacc acgcctggac tgaagggtgt ggtgccctcg acgccttatg 60
acgtcaaggg tctgttaatc cagtccattc gcgacgacga ccgggtggta ttctgcgagc 120
45 ataaaatgct gtacgacctc aaggggcgagg tacgggacga gatctatacc atcccgctag 180
gtgtagccaa ctacactcgc gaaggggagg acgtcaccat cattgcgttg tcggcaatgg 240
tacataaagc aaaccagggtg gcggacaaac tgccagaga ggggatctcg gtcgagggtg 300
50 tcgaccgcg aaccatttcg ccgctggatg aggaaggat tctggaatcg gtggcgctca 360
cggggcgggc cgtgattgtc gacgaatccg ctgcacgctt cggttttgct catgatgtcg 420
cggcgctgat tgcgtccag gcattccatt tcctcaaagc gcccgttctg ctggtgacgc 480
55 cgccacacac gccgggtccg ttctccctcg ctctcgaaaa actctggatc cctgg 535

EP 1 770 171 A1

5 <210> 410
 <211> 543
 <212> DNA
 <213> *Klebsiella pneumoniae*

10 <400> 410
 gcttgaaatg ccaaagtggg ggctttccat ggaggaaggc ttgctcgctc gatgggcaat 60
 ccaggagggt gacgatttca ccaggaggca ggaaatatgt gagattgaaa ccagtaaaat 120
 cgtcaatgtg ctggaggccc cctttgccgg tacgttacgt cggatactcg ccgcgaggg 180
 tgagacgctt caggtaggcg ccgtgctggc cctggcggct gacgcgctcg tcagcgatgc 240
 15 tgaactggac gaatttggtt cccgcctggc gacggcgaaa cccgcagccc caggcccga 300
 ggctgcgcg ccggacgtag cggcacaggc aggcgctaag ccagcttccg ttgtttcgcc 360
 gccatccaac agccccgagc cccctgttgg gcagaccgtc atccccgtca gtctgcaagg 420
 20 tgtgaccgat gtgactcagg ttaatgccac gcccacatgcg ttacgactgt ctgcccgctg 480
 ggggtgtcgac ctgaaaaaag tcgcggcagc gggcgcgggg atcgatatctc tgtttctgat 540
 25 ctg 543

30 <210> 411
 <211> 596
 <212> DNA
 <213> *Klebsiella pneumoniae*

35 <400> 411
 cagtcaggaa cacagcattg tcgatatcag catatccgga tgaatcaggg cgtgggagag 60
 cattatgaga tccctgtccc ctggtttctg ctgacccatc cggatgggtt tacgctgatt 120
 gacggcggtc tggctgtcga aggattgaaa gatcccagcg gttattgggg aagtactgta 180
 gagcagttta aaccggtgat gtcagaagaa cagggttgcg tggaacaact taagaggatt 240
 40 ggcatgtctc ctgaggatat ccgctatgtg gtccctgtccc atttgactc tgatcatacg 300
 ggagcaattg gtcgcttccc ccatgctacg catgttgtcc agaggcaaga gtatgaatat 360
 gcctttgccc ctgactgggt tacttcggga gcctattgcc gacgcgattt cgatcgcccc 420
 45 caacttaact ggctatttct gaacgggttg tccgatgac actatgacct ttacggtgat 480
 ggcacgttac aatgtatttt cccccaggg cattcacgg gccatcaatc ttttcttacc 540
 cgcttaccgg gtggtacaaa ttttacgcta gcgattgatg cggtttatac cttaga 596

50 <210> 412
 <211> 693
 <212> DNA
 <213> *Klebsiella pneumoniae*

55 <400> 412
 ccgttaccga tgttgattct gagccgcagc ccggccatct ggctgtggca aacgctgctc 60

EP 1 770 171 A1

	tatcaggtga gtcattccgga tcgtctgcgc aacgtccata ctgccccgc cgatctgtcc	120
5	tgccgcggagc tggcccatcg gctggagaat gcgcgcggc ttgagcggct tgccggcgaa	180
	gccgccctga tccacggaaa acgggtcgtc gggttgacc acgccgagct caaggtgatc	240
	ctcgccctgc tgcaagggca gacgataggc gaggaggccc aacgtctcgg attgagccag	300
10	aaaacgctct acaccagcg gctggctggg gtgaaaaagc tggtggaatg tcatccgat	360
	ctggccccc gctttccgcg cacgctgctg ccgogctcac ccgaaaacgc actgacggcg	420
	tttgaacagg aatgggtaca agcgattcac gatogccagg tcttcccggt ttttcaacct	480
15	atcgtcgata gtcgctcaca gctacagggg gtggagatcc tgatccgctg gcgccaccgc	540
	ggccaggtag ttcaccccca gacctttctg ccgcacttcc gcgccgacta cacctggctg	600
	ctgcttacgg cctttgttct gcaggaggcc gtgcagaata ttaatgagta tccaggcacc	660
20	ttctatTTTT cggtaacat accctcctca ctc	693
	<210> 413	
	<211> 514	
	<212> DNA	
25	<213> Klebsiella pneumoniae	
	<400> 413	
	ccgatcatga gaacatcagt attgaactgc agcgtgagtt ccttcctgag gaacgtgaag	60
30	attacgctca tgtcttctat agcggccctc ttgacgcctt ctattcgtac cagtacggtc	120
	ggttaggcta ccgcactctg gatttcgaaa aatttaccta tcaaggtagc tatcaggggt	180
	gcgctgtgat gaattattgc tccatcgatg tgccatatac acgcatcact gagcataagt	240
35	atTTTTctcc atgggaaagc catgaagggt cggctctgcta taaagaatac agtcgcgctt	300
	gcggcgagaa tgatattcct tattacccca ttcgacagat gggggagatg gctttactgg	360
	aaaaatatct ttctcttgcc gaaagtgaag aaaatattac cttcgtcggg cggtaggta	420
40	cctatcggta tcttgatatg gatgtaacca ttgcggaagc gctgaaaaca gccgatgagt	480
	ttttatcttc ggtggctaac caggaagaga tgcc	514
	<210> 414	
	<211> 584	
	<212> DNA	
	<213> Klebsiella pneumoniae	
	<400> 414	
50	agagatgggc tgcaaaactgc tgcagcgtac caccgcgaag ctgcgtctta gcgatgcgg	60
	ggaaacgata tatcagcatg cccagcagat gctggaagcg gcgcgacagg caatggattc	120
	cgcaggcagt cgccaaacgg tcgcccaggg aaagctgacg ctaagcgtcc cgaaagccgt	180
55	cggccgcttt gtgatocacc cgctgatgat ggcgtttttc caccgctacc cgcaggtgga	240

EP 1 770 171 A1

	cgtctgcctg cggtcggaag atcgccctct cgattttatc gatgacggtg ttgatctggc	300
	gctacgcatac accgataccc cctcccccg cctgcatggc aaaccgctga tgccaatcag	360
5	gcacgttatc tgcgccactg aggcctatct acagcagcac ggtacgccgt acacgccgca	420
	ggatctgcgc gcgcatacgt gcattagcct tggcgaaacg ccgcccgatg cgcgctggaa	480
	gttccgctcg gaaggcaaaa cagaaacggt gcaaacctac gggcggtacg ccgccaacca	540
10	taccgccgta cgcctcgacg cggtcagaca gcatttaggg atcg	584
	<210> 415	
	<211> 281	
15	<212> DNA	
	<213> Klebsiella pneumoniae	
	<400> 415	
	acagattaca ttgtcatttc ctgccagccg cgccctgagc ggccgagcgc tggcaggagt	60
20	cgtgggttca ggcatatgg aagtacttta taccgccgca cagagcgcca cgtcaacgt	120
	acagatcacc acctcagtg ataacagcca ggccgctgg caggcgctgt tcgacaggtt	180
	gaacctgatc aacggcctgc ccgccgggca gttgattatc cagacttcg gcgccacgcc	240
25	ggcgctogcc cgtattcgta ttgaacaggt ttttgaggag g	281
	<210> 416	
	<211> 656	
30	<212> DNA	
	<213> Klebsiella pneumoniae	
	<400> 416	
	atggattttg ccttaaccgc cacgctgttt agcgcgacgg taaaaacgcc gtggggccggg	60
35	atcgtcgccc agtcgccgt ggtgctggtg ttgaccggcg cgatgtggat cacctatgcc	120
	gcgatctact tctcgccac cagcgtgttc aaacgcacgc cgcaggatgc cgcgggtgctg	180
	acctcaccg tcgccctgcc aaactatgcc gcgttaggtc tgccgatcct cggcagcgtg	240
40	ctgggtgaag gcgcgtcaac ctactgtcg gtagcgggtct ctatcgctg cggctcggtg	300
	ctgatgaacc cgttctgcct gctgattctg gagcgtgaaa aagcccgcgc cgcgggtgaa	360
	aacagcgggt ctacgctggc aatgctgccg gtgctgatgt ggcgttcggt gaaaaaacg	420
45	atcgtctggg gcccgctgct tggggtggtg ctttcgcgca tcggcattaa aatgccggac	480
	ctgctgctgg cgtcgatcaa accgctgggc ctggccgcca ccgccgccgc gctgttctc	540
	accggggtga tctgtcggc gcgtaaactg cagctcaatg cgtgatcgc tacatcaacc	600
50	atcgtgaaac tgctggtgca gccgtttatt gcctggggtc tggatgatgtt acttgg	656
	<210> 417	
	<211> 456	
55	<212> DNA	
	<213> Klebsiella pneumoniae	

EP 1 770 171 A1

<400> 417
 tattttacctt tcccgggtcag ggcggccagc gtcccggcat gctggcgatg atccccgatac 60
 5 gcgaggcgat cctcaccacag gcgcgcgcgc tgctggggga tgaagtcgat accctcgata 120
 gcgccgatgc gctacaacac acccgtgcgg tccagctctg tctgctgata gccgggtgctg 180
 cctggggcgcg cgagctacag cgtcagggcg tggatccgca gatggtcagc ggccctctcta 240
 10 tcggcgcggtt tccggccgcg gtgattgccc gcgcgcctga tttcgccagc gcgctgcggc 300
 tggtagccct gcgcggggac ttaatggaac aggcgtatcc tgaaggttac ggactgacgg 360
 cgattatggg cctgaccgcg ccgcggggtt aggcgctgat gcagggcaac gaggtttatc 420
 15 tcgccaatct gaacgccgaa acgcagttcg tgattg 456

<210> 418
 <211> 537
 <212> DNA
 <213> *Klebsiella pneumoniae*

<400> 418
 tgctgctgat accaatgtag gcggcggtca ggttaatttc ttcggtaaag ttaccgacgt 60
 25 atcttgtagt gtttcogtaa acggccaggg cagcgatgcg aacgtttatc tgtcaccagt 120
 gactttaacg gaagttaaag ctgccgcggc ggatacctat ctgaaaccga aatctttcac 180
 catcgatgtt tctgactgcc aggcggctga tggcaccaaa caggatgatg tgagcaaaact 240
 30 ggggtgtgaac tggaccggcg gtaacctgct gcgcggcgca accgctaaac agcagggcta 300
 cctgggctaac accgaagcgc ccggcgcgca gaatatccag ctgggttctct ccaccgataa 360
 cgccaccgcg ctgaccaaca aaatcatccc gggcgacagc acccagccta aagcggccgcg 420
 35 tgatgcctct gccgttcagg atggcgcgcg ctteacttac tacgtcggct atgcgaccag 480
 caccocgacc acggttacca ccggtgtggg taacagctac gcgacttacg aaattac 537

<210> 419
 <211> 554
 <212> DNA
 <213> *Klebsiella pneumoniae*

<400> 419
 cgcaatacca taccttcacc gccacgatg ccgtggctta cgcgcaacag ttcgccggca 60
 tcgacaaccc atctgagctg gtcagcgcgc aggaagtggg cgatggcaac ctcaatctgg 120
 tgtttaaagt gttcgatcgt caggcgctca gccggcgat cgtaaacag gccctgcct 180
 50 acgtgcgctg cgtcggcgaa tcctggcgcg tgaccctcga ccgcgcccgt ctggaagcgc 240
 agaccctggg cggccactat cagcacagcc cgcagcacac ggtaaaaatc catcactttg 300
 atcccgagct gccgggtgat gtgatggaag atctttccga ccaccgcata tggcgcgag 360
 55 agcttatcgc taacgtctac tatcccagc cgcccgcga gcttggcgac tatctggcgc 420

EP 1 770 171 A1

aggtgttgtt ccacaccagc gatttctacc tccatcccca cgagaaaaag ggcgaggtgg 480
 5 cgcagtttat taaccggcg atgtgcgaga tcaccgagga tctgttcttt aacgaccogt 540
 atcagatcca cgag 554

 10 <210> 420
 <211> 220
 <212> DNA
 <213> Klebsiella pneumoniae

 <400> 420
 15 gtgcgtttta tctcctcaag ccagctcgcc agacgcgctt cggctctggc gaactggta 60
 tctgatcca gcaccagccc aacaaagcgg tcgccttcca gcgcgagga cgcgctgaat 120
 tcataaccct catttgcca gctgccaatc atctgcgcgc cgcgcgcgct cagggcgctc 180
 20 aacagcgggc gcatcccgct gacgaagttg tccggatagc 220

 25 <210> 421
 <211> 341
 <212> DNA
 <213> Klebsiella pneumoniae

 <400> 421
 30 aaattgccga agctcaatct ggtgaccggc tttgaaacct atctcggcaa cttccgcgta 60
 ttaaagcgga tgatggaaca gatggcggtg ccgtgcagcc tgcctctcca tccgtcggaa 120
 gttctcgaca cgcgcgcga cggctactat cggatgtatt ccggcggcac cagcagcag 180
 gagatgaaag aggccctga cgcctcgat acgctgctcc tgcagccgtg gcagctgctg 240
 35 aagagcaaaa aagtggtgca ggagatgtgg aaccagcccg ccaccgaggt cgccattccg 300
 ctggggctgg ccgccaccga tgaactgctg atgaccgtca g 341

 40 <210> 422
 <211> 400
 <212> DNA
 <213> Klebsiella pneumoniae

 <400> 422
 45 agagagcgtc attgagcagt ggtgccgcc ggcgcgcgc ccggctcagc gcaatcgcc 60
 ggtcaatctg ctggtcagcc atctctgttc gccggcgat atcgagtggc tgcgccgatg 120
 cgtcgaagcc tttggtctgc agccgataat cctgccggac ctggcgcaat cgatggacgg 180
 ccacctggcg cagggcgatt tctgcgcgt gacccagggc gggacgcgc tgccagat 240
 50 agagcagatg gggcaaagcc tgtgcagctt cgccattggc gtctcccttc atcggcctc 300
 atcgctgctg gcccgcgct gccgcggcga gggtatcgcc ctgccgcacc tgatgacct 360
 55 cgaacgctgc gacgccttta ttcataact ggcgaaaatt 400

EP 1 770 171 A1

<210> 423
 <211> 536
 <212> DNA
 <213> *Klebsiella pneumoniae*

5

<400> 423
 acagggttga tctctgtcga cattacgatg cgctttcctc ctggcgccag ttttcataacc 60
 ttcacccatg ccttgcctcg acccgctgcc agcgtaatca tggcggtggc tttctgtttc 120
 10 gtacttttatt tactgacctc cgcgtacata tcaggcgagc catcgatagt gtgggatctc 180
 cttcctcccg atattgctgg ccgcagctgg ctgcgatca ttttgctgtc gctgacgacc 240
 tcgctgattc tgtgggcccg cggcaaattg cccggttttc tctctcccg ccttatcgcc 300
 15 gccaaattca ccttttttct cctgctgttc gccgggtgcc caggaggcgt aaaagtactc 360
 agattactcg acttcgcccg cagcacgccg ctccagtatt acctgccgat cgtaccggtc 420
 tgctttatcg cttttggatt tcatggcagc gtccctctc tgacaagaat gtaccggggg 480
 20 gataatcctc gtgcggtcct ccgctctctc tattacgggt tcgccgtttc attaac 536

<210> 424
 <211> 282
 <212> DNA
 <213> *Klebsiella pneumoniae*

25

<400> 424
 aaaagacaag ctgttgctgt ttaccgccgc gctggtggcg gagcgtcgcc tggcccgcgg 60
 30 cctgaagctc aactatcccg agtcctggc cctgatcagc gcctttatta tggaaggcgc 120
 tcgggacggc aaaagcgtgg cctcgtgat ggaggaaggc cgacatgtcc tgacccgcaa 180
 gcagggtgatg gagggcgctc cggaaatgat cccggatatc caggctgaag ccaccttccc 240
 35 ggacggctcg aagctggtca ccgttcacaa cccgattatc tg 282

<210> 425
 <211> 587
 <212> DNA
 <213> *Klebsiella pneumoniae*

40

<400> 425
 atttcataaa ctcgattgg tattttgatt tgcattggac cgaccgagca atagccgctc 60
 45 gtgatgctgg ttatgagatt cacatcatta gtcattttgt tgatagtaaa ataaccaata 120
 aattcaaatc gttagggttt atctgtcata acgttccgct tgctgccag tcattcaacg 180
 tatttacttt tattcgagca ttctttgatt ctcgaaaat aattaaagaa atagaccggg 240
 50 atctgctgca ctgcatcact ataaaacctt gtctaattgg cgggttcttt gcgaaaaaaa 300
 cgcagcgtcc agttattttg agctttgttg gccttggtcg ggtgttttcg gaaaattccg 360
 ggcttattaa actactacgg catttttacaa ttaaagcata caaacatatt gcgagtaata 420
 55 aacgcagtat gtatatgttt gagcatgata aagatagaag gaaaattggt gattttctcg 480

EP 1 770 171 A1

gtattgatat ccagaaaacc attgtcattg atggtgccgg tatcaaccgg gaaatatata 540

aatattcggtt ggaacaaaag cgagatatcc ctgtagtgct gtttgcc 587

5

<210> 426
<211> 320
<212> DNA
<213> Klebsiella pneumoniae

10

<400> 426
aggttcaggt agctggaaaa acagtaagtc aagtagcaca agatattaca agccgattaa 60
ccacatatat tgaaagccct caagttgatg tcagcatagc tgcattccgg tcacaaaagg 120
15 tttatgtaac tgggtgaagtt gcaaactctg gaaaacaggc tattacaaat attcccctaa 180
ctgtgatgga tgctatcaat gcggcaggag ggcttgccgg tgatgctgac tggagaaacg 240
ttgtttcttac tcataacggg aaagatacaa agatttcatt atatgacta atgcagaaaag 300
20 gagatctaac ccagaatcat 320

<210> 427
<211> 280
<212> DNA
<213> Klebsiella pneumoniae

25

<400> 427
tgattcaatt ttagtgatct gcacaggaaa tatctgccgt tctccaattg gtgagcgttt 60
30 attaagaagg ctattaccaa gcaaaaagat taattccgct ggggttgagg cattgggtga 120
tcatgcagca gatgaatcgg caattcgggt cgctgaaaaa aatgggtcttt gtctcaaagg 180
ccaccgtggg acaaaattta cctctgcatt agctcgacag tatgatcttt tactcgtgat 240
35 ggaatattct catctagaac aaattagccg gatagcacct 280

<210> 428
<211> 200
<212> DNA
<213> Klebsiella pneumoniae

40

<400> 428
acatgatccc ggagaaattt agctggatta ttacttataa ccctctggcg agtatgatac 60
45 ttagctggcg tgagctattc atgaatgggg ttttaaacta tgaatatatc tccatactct 120
atattacagg ctttatcctg accatcgctg gcttggccat ctttaataaa ttaaaatatac 180
gatttgcaga gattttgtaa 200
50

<210> 429
<211> 387
<212> DNA
<213> Klebsiella pneumoniae

55

<400> 429

EP 1 770 171 A1

	tggaaccagt gatcaatttc agtaacgtta cgaaagaata tctcttttac catcatattg	60
	gttcagggtat taaagactta gtctttcatc ccaagcgagc ttttcagctg cttaaaggga	120
5	ggaagtatct cgcgatcgag gatattctcat ttaccgtcgc caaagggtgag gcagttgcgc	180
	tgattgggag aaacggcgca ggtaaaagca ctctgttagg actagtcgct ggcgtaataa	240
	agccaacaaa aggtctgggtg actactcatg gccgagttgc ttogatgctg gaactcggcg	300
10	gtggttttca tccagagtta acgggtcgtg aaaatattta tottaatgcc acccttctcg	360
	ggctgcggcg gaaggaagtt cagcagc	387
15	<210> 430 <211> 225 <212> DNA <213> Klebsiella pneumoniae	
20	<400> 430 gggtcatcc caaacctgct gggtcagcgc cacttaccg ttcagcttct ggccgtagct	60
	cggcacaata gcgtgaatgc ggctctgcca ctccggcgag ttaaactgct gcgggaacat	120
	ctgcttgagc acgttcaggg tgattggcgc gccgggtgaa gccccggcg aagcgccgag	180
25	cagcgcgga atggttttct gctgatcgac caccacttcg gtacc	225
30	<210> 431 <211> 690 <212> DNA <213> Klebsiella pneumoniae	
35	<400> 431 cctgctgcta ttgctgtcgc tggtagcca ggaaaaccgc caggcgctgg ccggggtgtt	60
	acgcgagcag tggcagacct ggacgctgct gccggctttc tttatctatt acgccctcag	120
	taatgtgtgg ggccatacgc cgcagcatat tgactcgccg atcaccacg gcgtgtatct	180
	gaccgggtat ctgttgctga tgacgatgct gctcaggac ggacgaacc gccgactggc	240
40	gatgctggcg gtggtcggcg ggatcaccgt gctctccctg tggacgctga ttatcgacca	300
	tacgctgggt ctaccgaac gagcgtctc ccccgagaac cccggacca cgaacgttat	360
	cgaccttgcc ggttactgag gcatcggcat tttaatctgc ggcattgctac tgaaagaaaa	420
45	agccagccac tggctctatc tgccggtggt catcatgctg gtgatgctg tgcacacca	480
	aagccgcggg ccgatcatcg ccctggtgct gccggctcgc tgtacgctg acctgcacgt	540
	cttcaccgc cgcaacctgc tgatcgccgc gccgctggcc gtgctggtag cgtgctttt	600
50	ggtcatgacg ccggtgggag acatgctgct gcccgcttc gaggagctgg gcacccaaag	660
	cgggctgcgc ctgagcatct ggcaccatac	690
55	<210> 432 <211> 211	

EP 1 770 171 A1

<212> DNA
<213> *Klebsiella pneumoniae*

<400> 432
5 aatttaacct ggtttgataa gaaaactgaa gagtttaaag gggaagagta ttctaaagac 60
tttggatgatg atggttctgt cattgaaagt ctgggatgc ctttaaagga taatattaac 120
aatggttgtt ttgatgtgaa aaatgagtgg gtttcattat tgcaacccta ctttaaacad 180
10 aaaatcaatc tttctgatag ttcataatctt g 211

<210> 433
<211> 326
15 <212> DNA
<213> *Klebsiella pneumoniae*

<400> 433
ggggagaata tccttgctct taaacgcgcg ctgggggtga ccaccgggat cctgccgtgg 60
20 aacttcccggt tctttcttat cgcccgcaag ctggcgccgg ccctgatcac tggaaatacc 120
atcgtcatta agcccagcga atttacgcc aataatgcca tcgcctttgc cgagattgtc 180
catcagggtt gggtgccgaa aggggtcttt aacctgtgc ttggccgcgg agaaaccgtt 240
25 ggccaggagc tagccggcaa tccgaagggt gcgatggcca gcatgaccgg cagcgtggcg 300
gcgggagaaa aaattatggc cgctgc 326

<210> 434
<211> 465
30 <212> DNA
<213> *Klebsiella pneumoniae*

<400> 434
35 gactcgccgg tgattaacac cgggcagggt tgtaactgcg tcgagcgggt ctatgttcag 60
cagggaatat acgaccgctt cgtcaaccgc ctccgtgagg cgatgaaggc cgtccagttt 120
ggcgaccgg cgacgcgaga tgacatcgcg atggggccgc tgatcaacgc ggccggcgcg 180
40 gaccagggtg cgggcaaagt gcgaagcggg ggccgagggg gcgcgggtgg cgctggcggt 240
cagccgctgg agggcaaagg ctatcttttat ccgcgaccc tgctgctgga tgtacgtcag 300
gagatggaca ttatccatga ggaaaccttc ggtccggtgc tgccggtggg ggccttttcg 360
45 accctcgatg aggcgctggc gacggccaat gacagcgatt atggcctgac ctctcaatc 420
tatacccgcg atctgaacgt ggcgatgaaa gcgattaagg gactg 465

<210> 435
<211> 465
50 <212> DNA
<213> *Klebsiella pneumoniae*

<400> 435
55 atgaaacgac ctgattgcat tcgccactgg cgcgaactgg aagggccgga cgatgccact 60

EP 1 770 171 A1

	tatcccgaca gcccgagcg tttttcgatt ggcgcgccgc tggggcgcg tttacgtctc	120
	aaccggttgg ggatccacca cgagcgactg ccgcccgggc ggcgcacctc gtaccgcac	180
5	gcggagagcg atgaggaaga gttcatctac gtgctggagg gctatccgga agtgtggata	240
	aacggctatc tctggaagct ggagccgggg gacagcgtgg gttttcccgc gggtaaccgt	300
	atctgccaca cttttctcaa taacaccgag caggagggttc gtctgctggt ggtgggcgag	360
10	gccacaaga aatacaaccg catctattat ccgctcaatc caggctatgc cgcgacgcgc	420
	caggatcggt gggttgacca tccgcgcgaa ttcttcggtc cacac	465
15	<210> 436 <211> 270 <212> DNA <213> Klebsiella pneumoniae	
20	<400> 436 ttgcttatat agaagtcata ccatcgttcg taagcggcaa cattgataga ttcagatgct	60
	tccagaagcc gggggatata ataaaccagt tcttcaaagg caatactgcc ttgagggata	120
	tcagaacggc tcaggcgaca aagaaggtta atcgtggctc gaaggatgat ccaactgctgt	180
25	gccggggagg atgggagggc gttcatgctt atcggaagtt catgaggaat taaagcaagg	240
	atctgatttc cactggtaga cagctcacgc	270
30	<210> 437 <211> 406 <212> DNA <213> Klebsiella pneumoniae	
35	<400> 437 gattcctgct ctgacaacca ttgttttaac catgaacgta gagtaacttc aggcacaggt	60
	agcctggcat attgagatag catgtaggat agcataaaaa atattttgcc cttggatgta	120
	aaaacgtttt ttaaacaat cagaatagtt ctactctcgt tttattacca attatagctg	180
40	gcacgtcagc tccttgctca atgcggacct ttcgctcgat agcttgctcg ctccgcgcca	240
	gaagcgaaca gtgttatgag tggccagtga taaaacgtca gccggttgac cttgccttac	300
	agcacctcaa ccacttcaaa ttcttctgcg atcaactcca tatcttcaga aaaatgacct	360
45	tcagagctga aaaatctctg atgctctttc ttccagtatt caaggc	406
50	<210> 438 <211> 401 <212> DNA <213> Klebsiella pneumoniae	
	<400> 438 attgacggga tatctgacca gtcggggaat taaaaaacag gaaatcgttg aggtcaacaa	60
55	tgctgcggat ctgcagaaac actgtacgtc gtgttgcccg gcggtggtgt ttctgaatga	120

EP 1 770 171 A1

	agactgtttc gtgcatgatg atgaaagtaa tggcattatt cgcagatca ttacgcaaaa	180
	cccggcgacg ctgtttgtta tctttatgtc gctggcgaac atccattttg accgctattt	240
5	gcggttacgg aagaatctgc taatcagttc aaaatcgata accccaaaag accttgatgt	300
	tattctgggt aattatctta aatacaaaaa caccagtgtg gggcagttaa ctttaccgac	360
	attgtcactg agtaaaacag aatcaaatat gctgcaaatg t	401
10	<210> 439 <211> 450 <212> DNA <213> Klebsiella pneumoniae	
15	<400> 439	
	cagcagcaag gtgtttaatg aggcgggtggg ccgtcaggtg gaattcgtcc aggacaacca	60
	ttcccagtc cagaaacgcg tattacgcgg gttgcactat cagctggatc cgcacgctca	120
20	gggcaagctg gtccgctgtg tggaaaggtga ggtgtttgac gtggcagtg ataccgtcg	180
	ttcatcgct acctttggta aatgggttgg agcgggtgctc agcgcagaga ataaacgtca	240
	gctgtggatc ccggaagggt tcgcccacgg gtttatggcg ctgagcgaca cgggtgcagtt	300
25	tgtctataag ggacgaact actacgcgcc gcagtcagaa cggagtatca tttggaacga	360
	tccggagata aggattgact ggccggcact gagcgactgc gtgctgtctc tgtcggagaa	420
	agacctgcgg gcacatactc tggccactgc	450
30	<210> 440 <211> 380 <212> DNA <213> Klebsiella pneumoniae	
35	<400> 440	
	ggggagaaag agaccctcac catcattgac gaccttcttt gggcgccac cggcgctgag	60
	ctgctggcag actgcacggc gacggcaatc cgtgaaacgc tgcgtaatcc ggcgctggcc	120
40	ggcacgtatc acctggtggc cagcggcgaa acagctggtg cgactatgcc cgctatgtgt	180
	ttgaagtggc gagagcgcac ggtgcgagc ctggcgggtgc aggaagtga gggcattccg	240
	aacgacggcc tatccgacgc cggcgaagcg tccgctcaac tcgcgcctgt cgaattaaaa	300
45	atccagcagg cattcggggg gactctcccg gactggcgtc aggggtgtggc tcgcgtggta	360
	acagaagtcc tgggcaata	380
50	<210> 441 <211> 180 <212> DNA <213> Klebsiella pneumoniae	
55	<400> 441	
	agtaaattca ggctggctct ggtgcggcag aagtaccgcc cggacggcgg cgcagaacgg	60

EP 1 770 171 A1

tttgtctccc gcgcgctgga agccctcgac agcagtcatt tgcaactgaa cgtcatcacc 120
 cgcgaatggc agggggccggt gaaaccggac tggcagatcc atatctgtaa cccacgtaaa 180
 5
 <210> 442
 <211> 689
 <212> DNA
 <213> Klebsiella pneumoniae
 10
 <400> 442
 tcatttgaag aacgacacag aggttcgggt gaagatatca agaaccgcct gagtttttat 60
 ttacctttct tgtctcgtct gaaggatctt tatccgaag gcgtgattgc ggatattggc 120
 15
 tgtggacgtg gtgaatggct ggaaatcctg actgaaaatg gtattgcaa catcggcgtc 180
 gatctcgatg atggcatgct ggcacgtgcc aaggaagccg ggctgaacgt gcagaaaatg 240
 gattgtctgc agtttctgca aaatcaagca gaccagagtc tgatagcgtt gactggtttc 300
 20
 catattgctg agcatttgcc ctttgaggta ttgcagcagc tcgtcatgca taccttacgg 360
 gtgctgaaac ctggcgggtt gctaatactc gaaacgccga acccgagaa tgtaagcgtc 420
 gggacctgtt cttttatat ggatccaacg cataatcacc ctttgccgcc gccattgctt 480
 25
 gagtttttac ctattcatta tggttttaac cgggcaatta cgttcgtct acaggaaaaa 540
 gaggctctca aatccccgga cgcagcgggt aatctggtcg atgtgcttaa aggtgtagc 600
 cccgattaca gcatcattgc tcagaaagca gcgcctgcag atgttcttga acgctttgaa 660
 30
 accctgttta cccaacaata tggcctgac 689
 <210> 443
 <211> 581
 35
 <212> DNA
 <213> Klebsiella pneumoniae
 <400> 443
 tgcctctatt atccaacctc tgcattgctg taaagcaaac tcttataatg atattggctg 60
 40
 tgcaggtgat gatactggag ataatatctc gtttaaaaat ccattctact gtgagctgac 120
 ggccattac tgggtatgga aaaatgaatc tctttccgat tatgtcggct tcatgcatta 180
 tcgtcgacat ttaaatttct ccacgcagca ggatcatgcg gaagataact ggggggtggt 240
 45
 gaattatccg ctaataaacc cggactacga ggcacagttt ggattaaccg atgacgctat 300
 tcgtacatgc gttgagggga gtgatctttt actacctaaa aaatggtcgg taacatcggc 360
 tggcagtaaa aataatctcg accactacag caagggtagg tttttacata ttaaagacta 420
 50
 caaggctgcg ctagagggtt ttgaagaact ttatccagaa tataagacag caatacagca 480
 gtttaataat gccactgatg gttattatac aaacatgttt gttatgcgca aagatatgtt 540
 cattgattac tcagagtggg tgttttagcat tctggatcgt c 581
 55

EP 1 770 171 A1

<210> 444
 <211> 649
 <212> DNA
 <213> *Klebsiella pneumoniae*

5

<400> 444
 ggtttaaggc aggtagtcag catatattgtg atgcgattga tacggactgg gttttctttt 60
 acgatgatga tgcttttcct gccagcgata tactggaaaa gttttttgct cttgaaaaaa 120
 10 aggaatgtca ggtcttttact ggttttagtca aagatcttca cggccaccct tgtgcaatga 180
 atcttccttt caggaaagta ccttcacatt ttgtcgatac tttacgttat attcgacccc 240
 cccaacgcct tgttcctacc attgacgaga gtgtcatggg tgagacagtt tcgtttgttg 300
 15 gcatgattat tagcagcaaa gtattgcaag agcatattga tcacatccat gatgaactgt 360
 ttatctattt tgatgatctt tattttggct atgcggttgac attggacggg caaaaaatcc 420
 tctattcacc agaactgatt tttcatcatg atgtcagtat ccaggggaaa atcatctctc 480
 20 cggaatggaa ggtatattat ctgtgccgaa atttaatttt ggccaggaaa ctattccagg 540
 aagtaaaagt atttagcaat ttctctatcc ttatacgcct atgtaaatat ttatccatat 600
 25 tgccatggca gcgcagaaaa tcatcatatc tgtgtttcat gtatcgtgg 649

<210> 445
 <211> 606
 <212> DNA
 <213> *Klebsiella pneumoniae*

30

<400> 445
 gtggcattgg tcgttatagt attgctatcg ccagagcgat tattagaaat aacaatcgac 60
 atgagggtttt catcgcgcta tccgctatgc tgggtgagtc gattactgat gttaaggcgc 120
 35 aatttgetga tctccagcca gcagacaaca tagtcgtctg gcattgctga ggaccagtac 180
 gtgcaatgga taaaggtaat gaatggcgtc gggagagcgc agaactgatt cggaagcgt 240
 ttcttgaatc attgcgtccg gatgtcggtt tcattacaag cttgtttgaa ggatcatgctg 300
 40 acgatgcggc cacttcggta cacaatttta gtcgtcagta caaagtagcc gtactgcatc 360
 acgatcttat tcccctggg caggctgaga cctatctgct ggatgatgta ttcaaatcct 420
 45 attatttaca gaaagtggaa tgggtaaaaa acgctgacct tctgctaact aactccgctt 480
 atacggcaca ggaagcgatt gagcatctgc atttgacagg cgaccatgtg cagaatattg 540
 cagctgcagc cgatcctcag ttttgatagg cggaagtgc agcagcagag aaagagtcgg 600
 50 tccttg 606

<210> 446
 <211> 450
 <212> DNA
 <213> *Klebsiella pneumoniae*

55

EP 1 770 171 A1

	<400> 446	
	tgacctatca ctcggatatt gtgaaacaaa aacggttaat gaagttgtac cagccgctgc	60
5	aggagcgatt cctcgccagc gtagactgca tcgtcgccctc gtcgcccaac tacgtggcct	120
	ccagccagac cctgaaaaaa tatcaggata aaaccggtgt gatcccgttt ggtctggagc	180
	agcatgacgt gcagcacgat ccgcagcggg tggcgccactg gcgggaaacc gtccggcgata	240
10	actttcttct cttcgctggc gctttccgct actacaaagg gctgcacatt ctgctggatg	300
	ccgccgaacg taaccggctg ccggtggtga tcgtcggggg cgggccgctg gatgcggaag	360
	tgcggcgtga ggccgacag cgcgggctga gcaatgtgtt gtttaccggc atgctcaact	420
15	acgaagataa atacattctc ttccagctct	450
	<210> 447	
	<211> 507	
	<212> DNA	
20	<213> Klebsiella pneumoniae	
	<400> 447	
	ttcaggcgaa atgctatgct cgcctcgcg acttcaaaaa gcaggggacc acgctgctgc	60
25	tggtttccca cagcgccggg gatatcgta agcactgca ccgcgccatt ttctcaaaaa	120
	atggtgacat ctgcatggac ggcaccgccc gcgacgtaac caaccgttac ctggatgagc	180
	tgtttgcaa accggataaa gacagcgca caaaaagcgc aacggctatc tcgtcagcca	240
30	gtggcgaaag ccagatgtct ctcgatgaga ttgaagatgt gtaccacacg cggccaggct	300
	accgtccgga agaatatcgc tgggggcagg gtggcgcaa aatcatcgat tatcatatcc	360
	agagcgccgg ggttgatttt cctccctcac tgacgggcaa tcagcagacc gattttctga	420
35	tgaaggctgt gtttgaatac gattttgatt gcgtggtgcc tggcatcctg attaagacc	480
	tcgatggctt attcctctac ggaacca	507
	<210> 448	
	<211> 678	
	<212> DNA	
40	<213> Klebsiella pneumoniae	
	<400> 448	
45	gctatgaact gatcctggtg aacgatggtt cgacagacaa cagcctggcg gtgatcgccg	60
	aatggcagga gcggctgcag aacgtccagg tgctggagca ggaaaaccag ggcgctctcg	120
	tcgcgcgcaa taccggcctc gccgcgcca gcggcaata tctcgcgttt ccggatatcg	180
50	acgacaaact ctatccgggc atgtatcgca cgctgctgga gatggccgag aaagaacatc	240
	tcgatatcgc cacctgcaac ggcacctatg tgtacgaaaa gcgccgcgag agccaccgga	300
	tcttcccact ggatcgctg ccctcgacgg gtgtgctgcc gggccatgtc tggcttaagc	360
55	aggccctgga ctcgcggaag tttctgcacg tcacctggct taatatttat cgtcacgact	420

EP 1 770 171 A1

	ttatccgccg gcatcacttc catttcgagc ctggcctgcg ccatcaggat atcccatgga	480
	ccacagaagc cctgctggcc gcggagcgcg tgcagtacac cagtcagcag ttctatgatt	540
5	actacattca ctctgagtcg gtgtcgcata agccggacaa cgacgacacg ctgatgcgtt	600
	cggcgcgccg ctatatgaag attctggaga tgctggaggc gattaaccag cgctacccgg	660
	ataaagtacg ccatatcg	678
10		
	<210> 449	
	<211> 585	
	<212> DNA	
	<213> Klebsiella oxytoca	
15		
	<400> 449	
	ctctgcctct attgctcttg ctctcacagc gcccgtagat tcatttgcag ccagcgatca	60
	gcgtgggtac aaacctgaag acgtcgcttt tgatgaaagt ttttttctgt ttggtggcca	120
20	tgtagggact tctgttgaat atgaagataa ggtaactcgt ggtttcaata acacggataa	180
	aaaggagaag acgattacca atgagggtttt caactttttt tataacaatc cacaatggaa	240
	ttttatgggt ttttactctt ttaaaataga aaatagagag caaaaggagc ctgggttatta	300
25	tgagaatgaa gatgggtatta agcagctttt ttcattgaat aaaggatcatg atcttggtaa	360
	cggttgggct actgggtttaa tttatgagct agaataaca agaagtaaag tttattctcc	420
	ggatgttagt ggtctacgta aaaaccttgc cgagcacagc attagaccat atttaacct	480
30	ctggaataat gattataata tgggattcta ttctaattctt gaataccttt tgagtaaaga	540
	agatcgcaat gcatggggga aaaggcaaga gcagggatat agtgc	585
35		
	<210> 450	
	<211> 340	
	<212> DNA	
	<213> Klebsiella oxytoca	
40		
	<400> 450	
	tatcgatgcg gatgaaaatt gcccaactac atcgttctct gaaagaggag gggcatcctg	60
	ctacaatgat ttatgttact cactgacaga ctgaagcgtt aactctagga gatcgcat	120
	gtgttcttaa ccatgggaat atcatgcagg ttgatacacc tactgatctt tataattatc	180
45	ctaataataa gttcgttgcc agttttatcg gttcaccatc aattaatttg atagatactg	240
	ctatccgtaa gaataatgag aggttgtagt ttgaaattgc tcctggcggt gaaatattaa	300
	ttccacatag taagcaagtg ttgcttgaag gttatattaa	340
50		
	<210> 451	
	<211> 608	
	<212> DNA	
	<213> Klebsiella oxytoca	
55		
	<400> 451	

EP 1 770 171 A1

	atccaatgac cagaaatgag ctgcgtagcg cccataataa gaaaagatgc cggaaatata	60
	cgcattgcttt ttccctcaga caataacata gttactcctg aaatttgatt tgctcatcaa	120
5	tgatattacg agcacgggtca agtgctgctt ttggcgcttg gtcattgatc cacatatcgg	180
	taatcgcatt tgccagtggtg gaccataaat aaccatttcc cggaaatagat ggcatggcat	240
	cagagtgaag cccttgctta ataattgcgc tcgtcgcttc atttgagatt ggtaggattt	300
10	tgcttcacag attcgggtacc ggaggtatag attctgtcat ctcatagcgt ttcattaaca	360
	tttcatcaga tgagagatag tcagcgaaaa gttgtgcccgc cttaggcgat ttactataag	420
	aagagacgac cgccaggcga accgtagaaa acgaacgtgg ctgttttcct tcaagagtag	480
15	gtatgggaac aacgcaaaaa ttaattttac tgttgttata tccctggatt gccatggac	540
	cgtcgatgat ggcagctact ttgccttcag aaaataagcc tcgacgcacc tgtggattac	600
20	gcataatct	608
	<210> 452	
	<211> 589	
	<212> DNA	
25	<213> Klebsiella oxytoca	
	<400> 452	
	cgtaaatatg ggacaaaggt ataaaccgtt aacgccaaga tcttgcaa atcaagttt	60
	gttaataatg ccctgcaa atcaccgccc aaagtcttga gaatctggag gcgttcccca	120
30	cggttgtagc tttctctggc atatcgatgg atcgccattg caaatcgtt caggaaagat	180
	ctgataccat attgtttttt taaccatttc tggcgtagaa agtacatcac ctggattgat	240
	ataagggaag caaaaaagt tggacaagtt actcagttct gtctctgcta cagggtggtt	300
35	acttatatca acacagcgtc gttcaccaaa taataatttt tccccgttat ttccgtataa	360
	tataaaacca tagcggttac gtcgtttgca cggagtaa atcgggcaaac agtggtcata	420
40	gtctctgctt tgccctctt tttccatgtg aacttcgttg ccgcgcctcc atccatgcgc	480
	gtcgtgccc ccaaggcttc caccatctag gccaccttcc tcccattgat agggatcgcc	540
	gatccacaga gagactttcg cgacctcgcc tttgactgtg cgaaatcta	589
45	<210> 453	
	<211> 528	
	<212> DNA	
	<213> Klebsiella oxytoca	
50	<400> 453	
	gcaagggtag aggtgtattg cgccttttcc ttattagcca tcgccgcac ataggcaaaa	60
	cgatattctt cataatttaa gcgaattatt tctggtatag aattatttg acagtgtcgg	120
	cttaatacac ttttttagact taacggaaa gctgagtgtt ttgttgctaa tccactgagc	180
55	actaacaatc taggttttaa aaccattatt ggatcaagta aggcctctggc tagttgatcc	240

EP 1 770 171 A1

atccacattc ggtagacttt ttgcgcccatt gcatcactgc catcaactcc ctgaattatt 300

5 tctaaggcac tcttccgctg aagagagAAC tgaaaatact gtcttttcgat cccggatgtc 360

gaaatgaatt gatgaacgca tcctatcccg cagcattcgc aaaccggaga tataccatca 420

atgagtggct gataatTTTT caatgggaga tgagcccagg aaacatttat tgcattgtca 480

10 aatacgcctat catcggttga tttatcgact acacaaagtt cacagcca 528

<210> 454
<211> 510
<212> DNA
15 <213> Klebsiella oxytoca

<400> 454
ataagccatg tgtttcttcc cgatgggaaa gcattagagc atttttcata tcaatcacta 60

20 gcatgaagcg atgtgatgga taaatctttt catctatttc aaatcgagag tacaattcga 120

tagattcatg tggtagcgcg agtcgggtta atgagaacac gataatccga accccgcgct 180

caacggcatt aatgagttct tgagcaatga gttcaagatg gaagtcagtg ttcaggtaaa 240

25 ctctgatttg agccagttcg agcatttctc tggctttttg tagtgaatta tcaaaaccag 300

agacgttata tatgaactct ttctcttctc gtagcatcat acgtgagagt tcttttttta 360

atacattgat gttttcaatg gtttgctttt ctatgttgct gaaaataagc tcgggagatt 420

30 ttgcttgata ctcttttagta ttgccatcgg ccataaaaaat gaagccattt ttatatagac 480

tatcaattga tgagtagacg ctagaacgtg 510

<210> 455
35 <211> 383
<212> DNA
<213> Klebsiella oxytoca

<400> 455
40 gccggtaatc ttgagctgct ggcccagggc cgtagcgtgc gcgtggatgt ggccgccggc 60

gccgaagcca tcatgaaagc ggtcgacggc tgcggcaggc tcgataacgt caccggcgaa 120

tcgggcacca atatcgggcg catgctggaa cacgtgcgcc agaccatggc cgagctgacc 180

45 aacaagccga gcagcgaaat atttattcag gacctgctgg ccgttgatac ctcggtaccg 240

gtgagcgtta ccggcgggtc ggccggggag ttctcgctgg agcaggccgt gggcatcgcc 300

tcgatggtga aatcggatcg cctgcagatg gcaatgatcg ccgcgaaat cgagcagaag 360

50 ctcaatatcg acgtgcagat cgg 383

<210> 456
<211> 400
<212> DNA
55 <213> Klebsiella oxytoca

EP 1 770 171 A1

<400> 456
 cctgctctat tccgtcagga gttttgccgc cgcgatgctc gcctattacg ttgccctggc 60
 5 gattggcctt gaacgccctc atgggcactc atcacgctct acatcgtgtc gcaaaccctc 120
 gtgggcgctc cctgtgcaga agcctttatc gcctggcccg taccgtggcc ggcgcgggg 180
 ccacggtatt gattgtgccg acgtttgtga ataogccaat tctatgtagc gtgattctgg 240
 10 ctggctggat cactttctgc ctctatttat ccctgcttga acgcacgccc cgcgcctatg 300
 cctttgtgct ggccggttat accgcaagcc tgattgggtt tcccgccgct gccgatcccg 360
 gcacgtgttt aacatcgccc tcatccgggt acaggaaatc 400
 15
 <210> 457
 <211> 535
 <212> DNA
 <213> Klebsiella oxytoca
 20
 <400> 457
 ggctgtctgc tatggattta ctctgcctgg cccgatggcg gcacggcggt gtcgattctc 60
 ggggtttgct gcacgctgtt tggcagtttc gacacgcccg ccccgcatat tgtgaaatat 120
 25 attatcggct ctgtctgggg cgtagtata agccttatct atagcttcgc cctgcttctc 180
 ccgctcagcg atttccccgt gctggtggcg gtgcttgccc cggctctatct gcttgccgga 240
 tcgctgcagg cgcggccccc caccaccttt atggccatgg ggatcacctt gacgctgccg 300
 30 gtactgtgcg agctggggcg gcgctacagc ggcgacttcg ccgacgcggc caacaccgcy 360
 atcgccctgt ttttcgcgac cggctttgcy gttatcggca tgagtctgct gcaaaccgta 420
 caggcgagcg cggcgataaa gcgtctgctg aaactgtgcc aacgcgatat tcgccgcagc 480
 35 gtgagcgcg tatttaaagg cgatgaaacg cactggacca atctgatgat cgacc 535
 40
 <210> 458
 <211> 400
 <212> DNA
 <213> Klebsiella oxytoca
 <400> 458
 tggcgtttat tttctgaaa cagtatgcgc agacgccctg gacgcgcgat ggccgggttc 60
 45 gggcagatgt ggtgcagatt gcgccgatg tttccgggccc ggtgagcagc gtggcggtgc 120
 gggataatca gtgggttaac cgcggcgatg tgctttatgc catcgacccg cgctggctga 180
 agctggcggt gctcagcgcg caggccgacg tcgaagcaaa acgtcatgaa atgctgatgc 240
 50 gccaggatgc cgcgccgcca cgcgcgctca tcaaaggggt catttccggc gaggatatcc 300
 agcaaacagg cagcgcagct gctgttcgcy gcggccaatt atcagggggc gctggctgcy 360
 ctggaactgg cgcagtgaia cttatcccat gcaacgctac 400
 55
 <210> 459

EP 1 770 171 A1

<211> 260
 <212> DNA
 <213> *Klebsiella oxytoca*

5 <400> 459
 cgttctcccc tgattcttgc cggcaccgcc ggaacttaca gctatgcagg aaccggtaac 60
 gtagtagcga tcgctcgcca tctggctaag atctgggata ttcttttagc agtccacctc 120
 gatcaccatg aagatctggc cgatatcacg cgcaaagtac aggcgggtat ccgctcggtc 180
 10 atgatcgacg gatcgcatto gccttttgaa gaaaacgtcg cgtagtcaa gagtgtggtt 240
 gaactgagcc accgctatga 260

15 <210> 460
 <211> 456
 <212> DNA
 <213> *Klebsiella oxytoca*

20 <400> 460
 cggcgcattht aaaatatcaa tcggttgatt taaatgaagt gatcacgcat tcgcttcaac 60
 tggtagcga ggatgccgc agccgggcaa tatctctgac gtttaccgcg cagcccggcg 120
 tatgccgat ccaggccgat ccggatcggt tgaaacaggt gctgcttaac ctttatctca 180
 25 atgctgtcca tgccattggc cgcgagggcg tgattacggt ggcggtgagg gagtgcggcg 240
 atgggcgagt caagggtgagc gttgctgaca gcggcaaggg aatgacggcg gaacagctac 300
 aggccatttt cacaccgtac tttagtacca aggcgcgacg caccgggctg ggcctggcg 360
 30 tgggtgcagaa catcggtgag cagcacggcg ggacaattga cgccgagagc gccccggca 420
 agggcgcgct atttacgttc tttttgccgg ttaatg 456

35 <210> 461
 <211> 536
 <212> DNA
 <213> *Klebsiella oxytoca*

40 <400> 461
 tattgaaggc accaccagcg acattcgctt cgtccacaac gttctgttcc cgtacgcccg 60
 cgaacgctg gccggtttcg ttaccgctca gcagtttgc gagccggtga agaccattct 120
 45 cgataacctg cgcgaagaga tcgccagcc ggccgctggc gccgaagaac ttattgctac 180
 cctcttcgcc tttatggatg aagaccgcaa atcgaccgcc ctcaaggcg tgcaaggcat 240
 tatctggcgc gatggctacg ttcattggcg ctttaccggc caoctgtatc cggatgttct 300
 50 gccggcgctg gaaaaatgga agtcacaggg tattgattta tatgtatatt cctcaggctc 360
 cgttgctgcg cagaaattgt tttttggcta cagcgatgaa ggtgatatta ctcatctgtt 420
 caacggctat ttcgataccc tggtaggtgc caagcgtgaa gcgcagtcct accgcaacat 480
 55 tgctgagcaa ctgggacagc ctctgcgcg catctgttc ctgtccgata ttcac 536

EP 1 770 171 A1

<210> 462
 <211> 557
 <212> DNA
 <213> Klebsiella oxytoca

5
 <400> 462
 cctggagtgt gcataagggc tggcatcgcg acggtaaact gcggatgggt cgggtcgcgc 60
 cgcaacctac ccgggcgacc accgatgcgt tctatccgct gatcctcaac agcgggcgga 120
 10 tccgcgatca atggcacacc atgacccgca ccggcgcggt gcgcgctctg atgcagcata 180
 ttaacgagcc ggtggtggag gtcgcgccgg cggacgcgca gcgttatcac ctgctggaag 240
 15 gtgaactggc gcgggtccgc tcaccgaagg ggggtgatggc cgcaaaagtg acgatcggcg 300
 acgggcaacg gcccgggctg ctgtttgtgc cgatgcactg gaataatcag tttgctcgtc 360
 agggacgggt gaacaacctg ctggctgcgg tcaccgaccc gcaactccggg cagccggaaa 420
 20 gtaaacagac ggcggtggcg atagccacct ggcttctctg gtggaaaggc gagctttttt 480
 cgcgccagcc ggttccgctg cccgcttcgc tgcaactggcg gcggcgggcg gcgcagggca 540
 ttatccatct ttcgctg 557

25
 <210> 463
 <211> 231
 <212> DNA
 <213> Klebsiella oxytoca

30
 <400> 463
 acacgcatat aaaccgcaac cgccggccag cgccgataaa gcgcccgcg aaattattac 60
 cctgccgcg ctgcagggtgc gcaaaaccac gcctccgctc agccgctggc tgcgcgatgt 120
 35 tacccaacgt cttctgccgc cgctgctcgg gctgggattg ctgctgctgg gctggcagct 180
 ggcggcgatg aacagcaaag gtttccgac gccgctctcc acgctggatt c 231

40
 <210> 464
 <211> 459
 <212> DNA
 <213> Klebsiella oxytoca

45
 <400> 464
 gcgataagtt ttcgatttca cggcgacgtt tattacagac gggggcgggc ctgggcggcg 60
 cgatgctgct ccccggcata atgcaggcgg cgtgggcggc tgggtcggat aaaccggaac 120
 agaccaccgt gcgggtgggg tttattccgc taaccgactg cgctccctta gccattgcct 180
 50 ccctgaaggg gttcgataaa aagtacggtc taacctcgt gccagcaaa gaggccagct 240
 gggccgcggt gcgcgacaag ctggttgccg gagagctcga cgccgcgcac attttgtacg 300
 gcatgctcta cggcctggag ctggggatcg ccagtaaacc gcaggcgatg gccaacctga 360
 55 tgacccttaa ccgcaacggc caggcgatta cgctctccag cgagctgcag gaacagggcg 420

EP 1 770 171 A1

	tcaccgacct gagcgggctg aaaaaacgga tcggtcagc	459
5	<210> 465 <211> 594 <212> DNA <213> Klebsiella oxytoca	
10	<400> 465 atgtcatggt tccgatactg tctgccgatg aaaacagcct ggtgctggtc tgggaaaaaac	60
	cggagtctga gaccgagcag gtggtggact acgccgtcta tcgtcaaggc gagcggctgg	120
	gcctggcgcg tgaatatcaa aaccattttt cccgggcaaa gccctatatatt gataacttct	180
15	atcagcggat cgccagcgac ggctggcagc agaaaatcga tctgcgcagc ttcacggcca	240
	ccaacctgca gccggatacg gagtatgcct ttacgggtgcg cgcgggtctac gccaatggcc	300
	aggaatctcc ggacagcgcg gtggttaaag cgcaaacccg caaaacgccg cacgtcatcg	360
20	aagccagcac attcggcgcg aagggtgacg gcaccacgct gaatacccag gcgctgcagc	420
	gggccattga tagctgtacc gtcacgcact atcctcaggg ctgcaagggtg ctgatttccg	480
	gcggcgaatt caaaactggc gcgttggtcc tgcaacgca tatgaccctg gatattgcgg	540
25	ctggcgccac cctgctgggt tcggacgatc cggccagta tccgcttgat aaag	594
30	<210> 466 <211> 625 <212> DNA <213> Klebsiella oxytoca	
	<400> 466 aagctggaac gtactaacga cggattttatt acctcatggg cggcaacggg cagtaatgaa	60
35	tgggtaagcc agcgggttcc tcacgccgat ctgattgctc agcaggataa agaacattac	120
	tacgtcgggt tcttcgcctc acgtaacgcc aaaatcacccg tcagcaatgc ttcctgacg	180
	acctccgcgg caaatacggg tccctccgcc ccgtatgttg ccaaaagctg gccgccggtc	240
40	atgcaaattg cctcggggac aaaaagccag agcaaagagt atctcctgca ggcgcgcacg	300
	aatagtgcag gacgcatcac cgtgcgtcag gatgaagtgg tgatcgggca ggataaagcc	360
	gtgaaggccg gagagatgta taccagcct gccgttctga aagataaaag cacattcgaa	420
45	attagcttca ctccagccac cggcgcaaac acgctgacct aaacgctgac ggttgaacag	480
	agcgccaatg tgacaggcaa tacgctgtac gccgcgccgg atgggctgtc gcaggctaaa	540
	gggacgaagg actcgcgcgt ggatttagcc accgctgtcg acctcgttcc ccctggcggg	600
50	caaattgtat tagccgcagt gatta	625
55	<210> 467 <211> 503 <212> DNA <213> Klebsiella oxytoca	

EP 1 770 171 A1

<400> 467
 acaggatagc gaacacctcg atattctacg ccagcttacc catgccatga gcgacgagcg 60
 5 cgtacctgaa gcgtatcagc gcacccccag agctccgcag gcggtgctgg agattctggc 120
 cgggatatct ctctgccga gggggaagat atggaccgcc tccggtgata cgatgaagag 180
 gcgacgttta ccctacgca atccccacgg actgcacgcg cggccaagcg cggctctggc 240
 10 gaaagcggcg aagcagtggc gatcgcaa atcggtggaa aatctcgaca cccgttccgc 300
 tattgttgac gccaaaaatc tgatgogggt cgtttctctc ggcgcaaagc aggggcatcg 360
 gctgcatttt atggccagcg gggaagatgc ccatcaggcg ctggaggcta tcggtacggc 420
 15 ctttaatgcc ggattaggcg aaattgccgc acagccgcag caggctcgtc agccagcaga 480
 aaagcctaaa cggagctggc ttt 503

 20 <210> 468
 <211> 534
 <212> DNA
 <213> Klebsiella oxytoca

 25 <400> 468
 atccataccc tgacactcaa tacggcaatc gatatgaata tgttttgcga tccgctgaag 60
 ccgtcggcag tgaaccgaac ccgacacacg gaatattgcc caaatggtaa aggagtgaac 120
 gtatcgtcga tattaatatc ttatcagcag cccactcaca ttataggtat tttcggctggc 180
 30 ttcactggcc gttatattgt ggaagagtta cgtcagaaaa aaattaaagt gacgccggca 240
 tgggtctctg agccaccag aattaatatt tttattaatg acggcgctga ggaatataag 300
 ctcgttaatc ctggagcaaa aattgatgat gagtgtaaac agcagggttat tcatcatctg 360
 35 caatgcgtcg cctctgggtga ttatttagcg atcagcggca gcctgcccc ggggattgaa 420
 agccgatttt atgtgaaat tattgaatta tgccagcaga aaagggtgtga agttatctc 480
 gatatcagcc atccggctct gcgccagctg cttgaattac ggcctttggt gatc 534
 40

 45 <210> 469
 <211> 599
 <212> DNA
 <213> Klebsiella oxytoca

 <400> 469
 gcttcagggtg ttgaaaatgc gattacgccc gcggatttaa aagatattta tggcggtatt 60
 attgccgctg ataaagacgt taacgccgag cgatttaatg gtctgccggc cattgaagtt 120
 50 ccggttaaag aagccattca ccatccggcc gacttaatta ataaatttat cagcggccag 180
 gcggcgcgtc gtcagggtat ttctgcctcc gccgattcaa cggagaaatc cgagcgggag 240
 tttttcgggc ccaaggtata taagcacctg atgagcggcg tctctaaca getgccgttt 300
 55 gttgtcgccg gagggatttt gattgccatc tcttctctgt ggggcatcta ctccgccgat 360

EP 1 770 171 A1

	ccaaactcgc cgcaatataa cgttatcgcc gccacgctaa tgaaggtggg gtcaacaggg	420
5	ctttctcaat tcatggtgcg gatatttcacg gcttatatgg cctgggtctaa ttccggggcgt	480
	cccggtaatg gtgcgcgggc tttgtcgggtg ggctataagc caaacgcaac cgcgcgacag	540
	gctttttctcg gcgggattat cgccgggtct cgccgcgggg gttattttat gctgctgct	599
10	<210> 470 <211> 675 <212> DNA <213> Pseudomonas aeruginosa	
15	<400> 470 caagcacaac aagaaatacg tcgtcgccct ggaccagggc accaccagct cccgcgccat	60
	cgtcttcgac cgcgatgcca acgtggtcag ccaggcccag cgcgagttcg cccagttcta	120
20	tcgcgaggcc ggctgggtcg agcacgaccc gatggaaatc tgggccacgc agagttcgac	180
	cctggtcgag gccctcgccc aggccagcat cgagcgcgac cagggtggccg ccatcggtat	240
	caccaaccag cgcgagacca cgggtggtctg ggaccgtcac agcggtcggc cgatccacaa	300
25	cgtcatcgtc tggcagcgcc ggccgacgcg ggccgatctgc gcgcagctca agcgcgacgg	360
	gctggaagac tacatccgcg aaaccaccgg gctggtcacc gatccgtact tctccgggac	420
	caagctgaag tggatcctcg acaacgtcga aggcgcggcg gaacgcgcgc gcaacggcga	480
30	cctgttggtc ggaccatcg acacctggct gatctggaag ctaccgaag gcaagggtcca	540
	cgtcaccgac tacaccaatg cctcgcggac catgctgttc aatatccaca gccgcgactg	600
	ggacgcacgg atgctcgagg tgctcgacat tccccgctcg atgctaccgg aggtgcgcaa	660
35	ctcttcggag gtcta	675
40	<210> 471 <211> 630 <212> DNA <213> Pseudomonas aeruginosa	
	<400> 471 gagcgacctt ggattctcga agatcctggt cggcctggtg cctaaggaca gccaggacta	60
45	cgagaacgcc ttcatcgctg gcaactaccc ggccgcctgg cgcgagcatt acgaccgggc	120
	tggctacgcg cgggtcgacc cgacggtcag tcaactgtacc cagagcgtag tgccgatttt	180
	ctgggaaccg tccatctacc agacgcgaaa gcagcacgag ttcttcgagg aagcctcggc	240
50	cgccggcctg gtgtatgggc tgaccatgcc gctgcatggt gctcgcggcg aactcggcgc	300
	gctgagcctc agcgtggaag cggaacaccg ggccgaggcc aaccgtttca tggagtcggt	360
	cctgccgacc ctgtggatgc tcaaggacta cgcactgcag agcggtgccg gactggcctt	420
55	cgaacatccg gtcagcaaac cgggtggttct gaccagccgg gagaaggaag tgttgacgtg	480

EP 1 770 171 A1

	gtgcgccatc ggcaagacca gttgggagat atcggttatc tgcaactgct cggaagccaa	540
	tgtgaacttc catatgggaa atattcggcg gaagttcggg gtgacctccc gccgcgtagc	600
5	ggccattatg gccgttaatt tgggtcttat	630
	<210> 472 <211> 324 <212> DNA <213> Pseudomonas aeruginosa	
10		
	<400> 472 atggatgctc gggacttccc gcgcgctttc atcgatgaag gtacgcaggc gcttcttctg	60
15	ccccagcggg ctgatcccg ccaccaggta gccgggtggc cgtgcgcgcg cctgcggatc	120
	ggccatgtcg gccttcttcg ccccgccgc atggggcagg gccttcaggc cgagactgcc	180
	gatcacggc accacggcca ccagcaactc gcccttctcc gtggcggcga gcagcgtctt	240
20	gaacacccgc tgcgggtcca ggcgagctt ttccgggcc tccaggccat aggaaggtgc	300
	cttggggtcg tggctgtagc tgag	324
	<210> 473 <211> 669 <212> DNA <213> Pseudomonas aeruginosa	
25		
	<400> 473 gatcgtctct gccagttcca tcacctgcc caagggcggc gacgtgcacc tggtgccgcc	60
30	tcgcccag ccttgctga ccatcgtggg gcatggcgtc aacgatctcg cgggttgcta	120
	cgaacggatc gagcgagggc tctgccaggg gctcaatgaa cgctggaca tgccgccgac	180
35	cttgcccgcc gggcaggcca atcccggtc cctgacggc gcgggctaca gcctgccggc	240
	ggacgacgaa ggcaaggcag agaaccccga cgtcgtctac taccggcga agttcgccag	300
	tggcgccggc ggggcccgc tacgcagcgt agtcgtacct ttctactggg gcttccgca	360
40	ggaagagcaa tacatcaaca agaccgggc ccacggcgaa tggctggacc gcaacggcaa	420
	ccggtggac aagtccggca ccaaggaagg cgggcagttc gtcaatgcca ccaccaacct	480
	gccggacatg tggggccagg gtttcaacgg caagctgttc ggtttcatct cgctggactg	540
45	gttcggcggc accatgacct atccgtgtt ttccgggca gggcgcaagt acatggtcct	600
	tgcggccatg cgctggcca tgttgatcaa gatcatccgc aagcgttacc cggacgacac	660
	catcaatgt	669
50		
	<210> 474 <211> 810 <212> DNA <213> Pseudomonas aeruginosa	
55		
	<400> 474	

EP 1 770 171 A1

	aggagagaac atgagtcgct caccatccc tcgccaccga gcgttgctgg ccggtttctg	60
	cctggctggc gcgctgtccg cccaggctgc caccaggaa gaaatcctcg atgcggcact	120
5	ggtcagcggg gattcctcgc aactgaccga cagccacctg gtcgccctgc gcctgcagca	180
	gcaggctgag cgcattccgc agaccgcac ccagttgctc gacggctctc accagaacct	240
	cagccaagcc tatgatcctg gcgccgccag catgtgggtc ctgccggcca acccggacaa	300
10	tacctgccc ttctcatcg gcgacaagg gcgcgtgctc gccagcctga gcctggaggc	360
	cggcggcgc gggctggcct atggcaccaa cgtgctcacc cagttgagcg ggaccaatgc	420
	cgcccaacgc ccgttgctga agcggggcgt gcagtggtg gtgaacggcg acccgggcgc	480
15	ggccactgcg aaggacttca aggtcagcgt ggtcgggggtg gacaagaccg ccgccctcaa	540
	cggcctgaag agcgcggcc tgcaaccggc ggacgccgc tgcaacgcgc tgaccgacgc	600
	cagttgcgc agcaccagca aattgctggc actgggcaac ggcgccagcg ccgctagcct	660
20	gagcggcacg gtgcgcgcac ggctacaggc cgggctgccg atcctcttcg tgcaaccaa	720
	tggctggaac cagagcagca ccggccagca gatcctcgcc ggccctgggc tgcaagagg	780
25	ccctacggc ggtaactact gggacaagga	810
	<210> 475	
	<211> 524	
	<212> DNA	
30	<213> Pseudomonas aeruginosa	
	<400> 475	
	aggagcaact gaagcgactc ggcatcgagg ccaggggcgc gggcgatgcc tacgctcgac	60
	tgggcgagat gcagcgtggc ctggatatgc aggtccgcgg cctgcaacgg ctggagcagg	120
35	ccagccaggc aatgccattg gctagcgcac ttctcggact ggtcgtggaa gccagcaaga	180
	cggctgcgcg ttatcaagcg cggttgcgcg acctgtcgat ccgcaacggc ctggacgtcg	240
	gccgggagcc agccttgcca tccctgatcc aggacagcgc caaccagagc ggccctgggac	300
40	gcacggtgac gctggacatg ctggagcact tgaacgccac cggcatgggg ttccgcccg	360
	cgcaaatgaa tctgggactg gcgggcccgt tcggctttgg ccaagggatt gcttcagccg	420
	aggttgccgg gctggttcga gcgttgcaac tggeccaggg ttccggactcg ccagagcaat	480
45	tgtccgccac cctcgaccgc ctggtcgtcc tgggtaaagg caga	524
	<210> 476	
	<211> 704	
	<212> DNA	
50	<213> Pseudomonas aeruginosa	
	<400> 476	
	aaggttgcca ggatcaacga tcagaaaatg gcgccatgg aggcgcgcgc ggaaaaggct	60
55	ggcaaggcta tcggcaaaag cctggacagt tcggcactga ttgccagcag cgtgctggac	120

EP 1 770 171 A1

	caggcgctgg acatgctggg caggaccagt cgccaggcgg gtcaggccaa gaagcctgtg	180
5	cagagcgccc aggacaaggt actggccgag tggagagccc ggcagaagga gctgggcgaa	240
	gcctggaaga gctatcgga accactccag gatctgtcca agctcaacga agcactactg	300
	aagaactctt ccgacaagct cgacaaggcg ctgctcaatc tcagcgagac cggcaagctg	360
10	tcgcttgcca acgtgggcaa ggccgcctac gccgatgctg cgcgcctcgc ctgcggcgag	420
	atgaccctga tgctgctgga cgggctgttt ggctgggtcg ccagcgctcg taccgagaag	480
	cccaaggctg acgacaaggc gggcaaggga caggcgaagg ctggcgacga cgagaaggaa	540
15	cagccgtcgc tccagtcgca ggtcttcaag cagtggctgt tgcagatgaa cagtgtctgg	600
	ggcgctacc gcgcgccct gcaggatata tccgggatga ccgacgagct gttcaggaat	660
	gcgtcggaga agctcgagaa gtgcgtgttc aatttcgcca ctag	704
20	<210> 477 <211> 234 <212> DNA <213> Pseudomonas aeruginosa	
25	<400> 477	
	aggcatccat cgagctaccg gcaggcccgc cgcagaccct gctgggtgccg ttgcggggcgg	60
	tttcgccaga ggctctgggc atgcgtgctg ggccgcccga gccacagatg gtcgaaggcc	120
30	agcgggtgct gctggcgcca cgcgtggagg gctcgctgga ccgcgccagg gtcggagcgc	180
	tgagcctgtc cctgcgctcg ccgcaagctc cccagagtat cctgctcgga cgtt	234
35	<210> 478 <211> 349 <212> DNA <213> Pseudomonas aeruginosa	
40	<400> 478	
	gcgaggaggt attcgacagc ctccctggaga tgcgcgtggc gatcctgctg aacctggggc	60
	gcgcggaaca ggcgctggcc ctgatcggcg agatggagga gaaggctcag ggcgcgagat	120
	ggaacaacat cagccagcca cggcgtctgt acaaggccca cggcctggcg ttgctggggc	180
45	gcgacgagga ggccctggag gcgctgctgc cgttctccga gattgccccg cgctaccgta	240
	cgatctggct gcgcgccgtc tacctgctgc tgcaacggac ccctgagcgc aacacctggg	300
	acttcggcgg gcgcctgcag cagatgctcg aacactactc gcagaaggg	349
50	<210> 479 <211> 402 <212> DNA <213> Pseudomonas aeruginosa	
55	<400> 479	
	aaggacttct ggtcggtgct cgaaccgcag gacggccagg ccgcactgat ggcgcggatg	60

EP 1 770 171 A1

	ctcgaagcttg gccacagcca gccgttgacg ccgaatgcga agatccccga aggcctggac	120
5	atttcgatca accgcgccaa ccagtgtccc acgcgggcca gcatcgatgc gttcatccgc	180
	aagaaccag gttccggcat gcccttcgcg gtggccgggc tgagcgacga cgaatacgcc	240
	actttgcaga agtggctggc cgcggggccc ccggtcgacc agcagccgtt ggggccgacc	300
10	gccgccgagg cgcgccaggt ggccagctgg gagcgtttcc tcaaccagcc tggggccaag	360
	cagagcctgg tctcgcgctg gctctacgag cacctgttcc tg	402
15	<210> 480 <211> 514 <212> DNA <213> Pseudomonas aeruginosa	
20	<400> 480 ttccctaacg aatgctgtca atcgccctgg ttagattgct ggtagtggac ccggcgcata	60
	cgttgccacc ttccggtgac tgctcgctgta ttccgaccag gctggtaaag acagtgacaa	120
	ggttcctgcc gggtttcgca atgcattggc actggaggcg tccgctctgg ggcttcctgg	180
25	caaggctgat ttgcaaagcg tcgccaaggc aggtggcacg gttgatatgc cggtagcact	240
	cacgagtgtc gcacaagaga gcccgagtgg taaatcgag attgccgcga tgttgaccaa	300
	cgggtgcaact gtccccaagg gcgtgcctgt tcgcgcgcgc accctcaatg ctgcgacggg	360
30	ccggtatgag gtgacgggtc ccgcaaagtc cacogtgccg aatacaccac cgctgatctt	420
	gacctggacc cctgccacc ctccaggaag ccagaacccc tcaagcacca ctccggtcgt	480
	accgcagccg gttccggtgt atgagggagc aacg	514
35	<210> 481 <211> 604 <212> DNA <213> Pseudomonas aeruginosa	
40	<400> 481 cgagcaccaa tatcgaactg gtttcgacca agggcgacct ggacctcgac ggctcgggtg	60
	actgggcacg gggaaccgg ctggggctgg gctccgcggc cgacctgacg ctgaatggca	120
45	ggctgaatgc cagtggcgcc aaggctgggc tggagctgaa ggccgaaggc gctatcgata	180
	tcaatgacaa gatcgttctc ggcggggctg gcagcgcgct ggccatggat gccggcgaag	240
	gccaccgggt gaacggcacg gcgtcggctc cctggccgg ggccaacgcg acctacgtct	300
50	ccggtggcta ttactacag gtggtgcaga acctggcgca gttgcaggcg atcaacaaga	360
	acctggacgg cctgtacgtg ctccggcgca atatcctggg cggcagctat tactgcacgg	420
	cgctgcaatc catcgcgggg ccgcggcggt tottcagcgg caccctggac ggtctcggca	480
55	acagcatcgg caatctctcg atcagcaaca ccgggcccga tgctgggctg ttcccccgt	540

EP 1 770 171 A1

cctcgggcac cctgagcaac ctgaagctga acaacctgcg ggtatccgat aacacctacg 600
gctc 604

5

<210> 482
<211> 412
<212> DNA
<213> Pseudomonas aeruginosa

10

<400> 482
gctttacctt gatcgaactg atgatcgtgg ttgogatcat cggatttctt gctgccgctg 60
ctttgccggc atatcaggat tacaccattc gtgctcgcgt gacagagggg gttggcctgg 120
15 ctgccagcgc caagacgctt attggcgata gctctgccac tgccggtgag ctagccgctt 180
cggcaagggt ctggaatgct caagccggta acgccggtgc taccagtaag tatgtgacct 240
ctgtacaaat tgcagaggcg actggtgaaa tcaactgttac tttcaatgcc gcaaactggy 300
20 gtaatatctc ggctaactct accctgggat ttactcccta tgtgcagaat gctgccggtg 360
ccccgactca attgggtgcc agttatgctt ccggtgtgac tggctctatt ga 412

25

<210> 483
<211> 320
<212> DNA
<213> Pseudomonas aeruginosa

30

<400> 483
tgccgtgagt gaaatcagcg cggtgaagac cgctgcggag tcggcgattc tggaaggcaa 60
gaagcttggt tccaaggata atcccgcgga tggggaatat gatcttggtt ttaccaagtc 120
tactttgctt gctggcaacg acggtgaaggc acagatcacc atcaactggc aaagcagtcg 180
35 aaccccgacc attgcgggga ctctgggtaa ctctgctggt aaggccatca gcggtgccgt 240
tatcaccatc aagcgtagtg ctgagggagt ctggacctgc gctaccagtg ggtctccggc 300
caactggaaa gccaaactacg 320

40

<210> 484
<211> 738
<212> DNA
<213> Pseudomonas aeruginosa

45

<400> 484
ggtatcaacc cactaaaggc ccgcaagaaa ggtatcacc tgtgggcagg gaagaagatt 60
aagcccatgg acatcgctt gtttcaactc gcagatgtct accatgatgg gtgccggcga 120
50 ccggtactgc aatcttttga catcatcggc gaaggattcg aaaatccaaa catgcgcaag 180
ctagtcgatg agatcaagca ggatgttgcc gccggtaaca gcttagccag ttcacttcga 240
aagaaacca tttacttcga tgatctctac tgcaacctgg togatgctgg cgaacagtc 300
55 ggtgctttgg agacattatt ggatcgggta gcaacttata aagaaaagac agaattccctg 360

EP 1 770 171 A1

	aaagccaaaa ttaaaaaagc catgacttat cccattgcag taattgtagt ggcccttgta	420
	gtatcggcga tccttctgat aaaagtgggc ccacagttcc agtccgtatt tgcaaatttt	480
5	gggtgccgagt tgccggcctt tactcaaattg gtcacaaatc tttccgagat gcttcaagag	540
	tggtggetca tagtgcttat tgggtcttttt gccgcagctt ttgcatttag ggaagctcat	600
	catttgggat cagtagatcg gggcctgctg aaactaccta tcacgcggcg gatactttac	660
10	aaatcagcta tcgcccgcta cgcccgaaag ctatccacta cctttgcggc tggagtgcct	720
	ctggtagaag ctctggac	738
15	<210> 485 <211> 740 <212> DNA <213> Pseudomonas aeruginosa	
20	<400> 485 gaagtgaact ccgccaagga tctgaaggcg gcgctgggca tcacgtgca gcgggtcaag	60
	gaagccatgg gtacccaggt ctgctcgggtg tacctgctcg acaccgagac ccagcgtttc	120
	gtcctgatgg ccaccgaagg cctcaacaag cgttccatcg gcaaggtcag catggccccc	180
25	agcgaaggcc tggtcggcct ggtcggcacc cgcgaggagc cgtcaacct ggagaacgcc	240
	gccgcccacc cgcgctaccg ctatttcgcc gagaccggcg aggagcgcta cgcgtcgttc	300
	ctcggcgcgc cgatcatcca ccataggcgg gtgatggggg tgctggtggt gcagcagaag	360
30	gagcgcgcgc agttcgacga aggcgaggag gccttcctcg tcacccatgag cgcacagctc	420
	gccgggggtca tcgcgcacgc cgaggcgacc ggttcgatcc gcggcctggg caagctcggc	480
	aagggcaccc aggaagccaa gtctcgtcggc gtgcccggcg ccccggggt cgggggtggg	540
35	aaggcgggtg tgggtgttgc tccggccgac ctggaagtgg tgccggacaa gcaggtcgac	600
	gacatcgacg ccgagatcgc cctgttcaag caggccctgg agggcggttc cgcgacatg	660
	cgcgcgctgt cgagcaagct cgccagccag ttgcgcaagg aagaacgcgc gctgttcgac	720
40	gtctacctga tgatgctcga	740
45	<210> 486 <211> 680 <212> DNA <213> Pseudomonas aeruginosa	
50	<400> 486 tcgagaagtc gatgttcaag gacctcggca ttcccactcc ggattttgcg gacgtccagt	60
	cccaggccga cgttgatgcc gctgcagcag ccataggcgt gccggcgggtg ctcaagaccc	120
	gcacactggg gtacgacggc aagggccaga aggtcctgcg ccaaccggcc gacgtgcagg	180
	gcgcgtttgc cgaactgggc agcgtgccgt gcacccctga gggttcctg ccggttcaccg	240
55	gggaagtttc gctgggtggc gtgcgcgctc gagatgggga gacgcgttta taccctctgg	300

EP 1 770 171 A1

	tgcacaacac ccacgacagc ggcatacctca agctctccgt ggccagcagc ggcataccgt	360
5	tgcaggcgct ggccgaggac tacgtcggcc gtgtgctggc cgggctcgac tacgtcggcg	420
	tgctggcctt cgagttcttc gaggtggacg ggggcctgaa ggccaacgag atcgccccgc	480
	gcgtgcacaa ctccgggcac tggaccatcg aaggcgccga gtgcagccag ttcgagaacc	540
10	acctgcgcgc cgtcgccggc ctgccgtggt gctcgaccgc caaggtcggc gagagcgcg	600
	tgctcaattt catcggcgcg gtgcccccg tggtcaggt ggtcgccgtc gccgactgcc	660
	acctgcatca ctacggcaag	680
15	<210> 487 <211> 210 <212> DNA <213> Pseudomonas aeruginosa	
20	<400> 487 agacctacaa caaggtttcg cgcttcatcc gcgagatccc gccggcgctg atccaggaag	60
	tgcgctgtc caataccgtc agccgcccct acggcggcac ctgcgcagt gccggcgga	120
25	acctcttcag cggcgccggg gtgccggaga cgcccttctc cctcgccag cgggtgcgcc	180
	acgcgtgtt cggcgaagg actatcctca	210
30	<210> 488 <211> 351 <212> DNA <213> Pseudomonas aeruginosa	
35	<400> 488 attcctctct gaatcgctgg aagggtttc cgccgccatg atcgccgagc tgggacgcta	60
	ccggcatcag gtcttcatcg agaagctggg ctgggacgtg gtctccacct ccagggtccg	120
	cgaccaggag ttcgaccagt tgcaccatcc gcaaaccgc tacatcgtcg ccattggccg	180
40	ccagggcata tgcggttggt cccgctgct gccgacgacc gacgcctacc tgctcaagga	240
	agtcttcgcc tacctgtgca gcgaaacccc gccgagcgat ccgtcggctt gggagctttc	300
	gcgtacgcc gccagcgcg cgacgatcc gcaactggcg atgaagatat t	351
45	<210> 489 <211> 530 <212> DNA <213> Pseudomonas aeruginosa	
50	<400> 489 aggaatgacg gaggtttttt gctgtggtgg cacggtttgc gttgcgagat gcagccgatc	60
	cacgacagcc agggcggtt cgccgtcctg gaaaaggaag tgcggcgctt gggcttcgat	120
55	tactacgct atggcggtcg ccacacgatt cccttcaccc ggccgaagac cgaggtccat	180
	ggcacctatc ccaaggcctg gctggagcga taccagatgc agaactacgg ggccgtggat	240

EP 1 770 171 A1

	ccggcgatcc tcaacggcct gcgctcctcg gaaatggtgg tctggagcga cagactgttc	300
5	gaccagagcc ggatgctctg gaacgaggct cgcgattggg gcctctgtgt cggcgcgacc	360
	ttgccgatcc gcgcgccgaa caatttgctc agcgtgcttt cegtggcgcg cgaccagcag	420
	aacatctcca gcttcgagcg cgaggaaatc cgcttgcggc tgcgttgcat gatcgagttg	480
10	ctgacccaga agctgaccga cctggagcat ccgatgctga tgtccaaccc	530
	<210> 490	
	<211> 569	
	<212> DNA	
15	<213> Pseudomonas aeruginosa	
	<400> 490	
	ttcaacctca acggactggg gcgcaagcgc aagggtcaagc cggactcggg gaagcagttc	60
20	cgtcgcctgc tggccaccct ggggatgaag gaagagatcg tccagggctt gccggaccgg	120
	ctggccgact ggctcgacgc cgaccagaat ccgcagggcg agcaaggcgc cgaggacaac	180
	cagtacctgc tggaggcgcc ggctaccgc gccgccaaacc gcagtttcaa ggacgtgtcc	240
25	gagctgcgcc tgctgaaatt gtcggaagcc gactatcgac gcctgctgcc gttcgtcagc	300
	gccttgcccg aagatgcgcc gctgaacgtg aacactgcc a gcgtgccggg gctggccgcc	360
	atgttcgaga tcgatccggg acaggcgga aacatcgtag acgcccgcg tcgggaaggt	420
30	ttccagagca aggacgattt caccaagcat ctgacccagt tgggttcgaa gaccggaac	480
	gtcagttatg ccgtcgccac ccgtacttc caggatgatc gcgaggtcag cctgggcgac	540
	cgccggcagg tgctggtgag taccttgca	569
35	<210> 491	
	<211> 345	
	<212> DNA	
	<213> Pseudomonas aeruginosa	
40	<400> 491	
	cattgaaagg tcgtagcgat gcgtataccc aggtagacaa ctctctgcat gcctatgcgc	60
	ggggcgggga cgaattggtc aatggccatc cgtcctatac cgtcgaccag gggcgggagc	120
45	agatcctccg cgaacaggcg tcttggcaga aagcgccggg cgactcgggt ctgaccctgt	180
	cctattcggt cctgaccaa ccgaacgact tcttcaatac gccgtggaag tatgtcagcg	240
	atatctactc gctgggcaag ttcagcgcc tttccgcgca gcagcaggcc caggccaagt	300
50	tgctcgtgca atcctgggtc gacgtcacca atatccactt cgtcg	345
	<210> 492	
	<211> 576	
	<212> DNA	
55	<213> Pseudomonas aeruginosa	

EP 1 770 171 A1

	<400> 492	
	ggtaagcac atcctagtgc gcgacggcca gcatgtggag gcgggagagc cgctgatccg	60
5	catggaaccg acccaggccc ggccaacgt cgattcgctg ctcaaccggt acgccaacgc	120
	gcggtcaac caggcgccc tgcaggcca atacgacggc cgcggaacc tggagatgcc	180
	cgcggggctg gccgagcagg ccccgctgcc gacctcggc gagcgctgg agttgcagcg	240
10	gcagttgctg cacagccgcc agaccggct ggccaacgaa ctctccgcat tgcgggcgaa	300
	catcgagggg ctgcgcgcc agctogaagg gttgcgccag accgagggca accagcgct	360
	gcaacaacgc ctgttgaaac gccagttgag cgggtgcgcg gacctcgccg aggaaggcta	420
15	catgccgcgc aaccagttgc tcgaacagga gcgccaactg gccgaggtga acgcccggct	480
	atcgagagc agcggtcgct tcgggcagat ccgccagagc atcgccgagg cgcagatgcg	540
	catcgcccaa cgcgaggagg agtaccgcaa ggaagt	576
20		
	<210> 493	
	<211> 581	
	<212> DNA	
	<213> Pseudomonas aeruginosa	
25	<400> 493	
	ccgaaggact tggtttactc caactttgtg cagcaggacg gcggtagcac cctgttgggg	60
	cagtacgaca tgatcaacga aggcagccaa gtgattgaac ttgccgtcaa cttgcaacaa	120
30	gggttagtgg acaccttcac ctggagcgtc actgagcagt tgaaggctcg tgtggaagtc	180
	aagggtgaagg cgaacattcc cctagtgggc ggcgctgaga tcaccagtac ggtggaattg	240
	tcactgtcct ctacccaagg gcgagtagc agcaagtctt ccaactatgg cgctctacc	300
35	aagggtgctta tttcccaca tagccacggc tggggagagg ttgccttgag ctttactgag	360
	ctgcgcactc agtgggtcgg taatgtcggg cttaaggat atgtggcaat ttggttcaac	420
	aacaagtcg cattgaacaa cgatggcgat taccactacc tgtgggtcat tcccgtagg	480
40	caggtatattt gggagtgcgt ccagcacaac atagtcaata cctcgggcta tgcgtacaa	540
	ggcaatggag tgttggcgca agccacaggc accttcata g	581
45		
	<210> 494	
	<211> 457	
	<212> DNA	
	<213> Pseudomonas aeruginosa	
50	<400> 494	
	cactttcgt tattgctcg aagacgaagg ctacagcgtg gccaccgcca gcagcgccc	60
	gcaggcggag gccctgttgc agcgccagg attcgacctg tgcctcctcg acctgcgcct	120
	ggcggaagac aacgggctcg acgttctcgc ccagatgcgc gtccaggcgc catggatgcg	180
55	cgtggtgatc gtcacgcgc attcggcggg ggataccgcg gtogatgcca tgcaggcgg	240

EP 1 770 171 A1

	cgcggtggat tacctggtea agccctgcag cccggaccaa ctgcgcctgg ccgccgccaa	300
	gcaactggag gtgcgccaac tgaccgcgcg cctggaggcc ctggaggacg aagtgcgccg	360
5	ccagggcgac ggctggaat cgcacagccc ggccatggcc gcggtactgg agaccgcgcg	420
	ccaggtagcg gcgaccgacg ccaacatcct catcctc	457
10	<210> 495 <211> 289 <212> DNA <213> Pseudomonas aeruginosa	
15	<400> 495 gactggetga atcgtctcgc cgaggccgat cgccagaaca gtttccaagg caccttcgtc	60
	tacgagcgca atggcagctt ctccacccat gagatctggc atcgcgtagg gagcgatggg	120
	gcggttcgcg agcgctcgt ccagctcgac ggcgcgcgcc aggaagtggg ccgggtcgac	180
20	ggcgccaccc agtgcacag cgcgccgctt gccgaccaac tggccgatgc ccagctgtgg	240
	ccggtgcgca agttcgatcc ctcccagctg gcttctctgg acgacctgc	289
25	<210> 496 <211> 659 <212> DNA <213> Pseudomonas aeruginosa	
30	<400> 496 attgtcgatg acgaacctct ggcgcgagag cgccctggccc gattggtagg gcaactggac	60
	ggctatcgcg tctctgagcc ctcgccagc aatggcgaag aagcgctgac gctgatcgac	120
	agcctcaagc ccgatatcgt cctgctggat atccgcagtc ccggtctgga cggcctccag	180
35	gtcgcgccca gactctgca gcgggaagcg ccgccggctg tgatcttctg cacggcccat	240
	gacgaattcg cctggaagc cttccaggtc agcgccgtgg gctacctggg caagccggg	300
	cgagcggaag acctggccga ggcgttgaag aaagcctcgc gaccgaaccg cgtgcaactg	360
40	gccgcgctga ccaagccccc ggcctccggc ggcagcggtc cgcgcagcca catcagtgc	420
	cggaccgca aggggatcga gctgatcccg ctggaagagg tgatcttctt cattgccgac	480
	cacaagtacg tgaccttgcg ccatgcgcag ggcgaggtgc tgctggacga gccgttgaag	540
45	gcgctggaag acgagttcgg cgagcgcttc gtgcgcagtc accgcaacgc gctggctgcc	600
	cgcgaaacgga tcgaacgcct gcagcgtacg ccgctggggc atttccagct ctacctgaa	659
50	<210> 497 <211> 629 <212> DNA <213> Pseudomonas aeruginosa	
55	<400> 497 cgtttgggac agattgaggc ccgccaggtc gccaccccca gtgaagcgca gcagttggc	60

EP 1 770 171 A1

	cagcgccagg acgcgccgaa gggtagggg ctgctcgctc gcctgggcg gcgctcgtg	120
	cgcccggttcg tggcgatcat ggactggctg ggcaactgt tgggctcca cgccgcacc	180
5	ggcccgagc ccagtcagga cgcgcagcct gcggtcatgt cctcgccgt cgtgttcaag	240
	cagatgggtgc tgcagcaggc attgcccatg accttgaagg gactcgacaa ggcgagcgag	300
	ctggcgaccc tgacaccgga aggactggcc cgggagcact ccgcctggc cagcgagat	360
10	ggggcgctgc gttcgctgag caccgccttg gccggcattc gtgccggcag ccaggtcgag	420
	gagtcccgta tccaggtctg ccgcctgctc gaacggagca tcggcgggat cgcgctgcag	480
	cagtggggca ccaccggcgg tgcgcgagt caactgggtc tcgacgcaag ccggaactg	540
15	cggcgcgaaa tcaccgacca gttgcatcag gtaatgagcg aggtcgact gttgcgcaa	600
	gcggtagaga gcgaggtcag cagagtatc	629
20	<210> 498 <211> 332 <212> DNA <213> Pseudomonas aeruginosa	
25	<400> 498 aatgcgataa ccacagcgt cgcgaggcg gcggacagca gcgtcgatct cggcgccacc	60
	atgatcacct ccaaccagtt gggcaccatc accgaggaca cgggctccta tacgccaggc	120
	actatcgcca cggcgacccg cctggctctg actccgcgcg agacgcccc a gtcgatcacc	180
30	gtggtcacc gccagaacat ggacgacttc ggctcaaca acatcgacga cgtcatgcgc	240
	catacgccgg gcatcacgt ctcggcctac gacactgacc gcaacaacta ctatgccgc	300
	ggcttctcga tcaacaactt ccagtacgac gg	332
35		
	<210> 499 <211> 456 <212> DNA <213> Pseudomonas aeruginosa	
40	<400> 499 ctgggacgtt agtgtcatcg acgagatgga aatcgatggt tatgacgac tcagtcctta	60
	ttacatgttg atccaggaag atactcctga agccaggtt tcgggttgct ggccaattct	120
45	cgataccact ggccctaca tgctgaagaa caccttcccg gagcttctgc acggcaagga	180
	agcgcttg cgcgcgaca tctgggaact cagcgcttc gccatcaact ctggacagaa	240
	aggctcgtg ggcttttccg actgtacgt ggaggcgatg cgcgcgctg ccgctacag	300
50	cctgcagaac gacatccaga cgctggtgac ggtaaccacc gtaggcgtg agaagatgat	360
	gatccgtgcc ggctggacg tatcgcgctt cggctccgcac ctgaagatcg gcatcgagcg	420
	cgcggtggcc ttgcgcatcg aactcaatgc caagac	456
55		

EP 1 770 171 A1

<210> 500
 <211> 275
 <212> DNA
 <213> Pseudomonas aeruginosa

5

<400> 500
 aagaagtctc tgctccccct cggcctggcc atcgggtctcg cctctctcgc tgccagccct 60
 ctgatccagg ccagcaccta caccagacc aaatacccca tcgtgctggc ccacggcatg 120
 10 ctcgggttcg acaacatcct cggggtcgac tactggttcg gcattcccag cgccttgccg 180
 cgtgacggtg ccaggtcta cgtcacgaa gtcagccagt tggacacctc ggaagtccgc 240
 ggcgagcagt tgctgcaaca ggtggaggaa atcgt 275

15

<210> 501
 <211> 648
 <212> DNA
 <213> Pseudomonas aeruginosa

20

<400> 501
 atggcagttt cagtgtcgac gccagcggca acctgctgat caccgcgcac atccgcaacc 60
 tgttcgaacta ctctctcagc gccgtggcg aagagcccct gcagcaaagc ctggaccgcc 120
 25 tgcgcgccta catcgccgcc gaactccagg agccggcgcg cggccaggcg ttggcgctga 180
 tgcagcaata catcgactac aagaaggaaac tgggtgctgct cgaacgcgcac ctgccgcgcc 240
 tggccgacct cgacgccctg cgccagcggg aagccgcggt gaaagccctg cgcgcgcgga 300
 30 tcttcagcaa cgaagcgcac gtggcgcttct tcgcgcgacga ggaaacctac aaccagttca 360
 ccctggagcg cctggcgatc cgccaggacg gcaagctcag cgccaggaa aaggccgccg 420
 ccacgcaccg cctgcgcgcc agcctgccgg aagaccagca ggaaagcgtg ctgccgcaac 480
 35 tgcaaagcga actgcagcag cagaccgccg ccctccaggc cgtggtggcc ggcccggaag 540
 ccacccgcca gatgcgtcag caactggtgg gcgcggaagc caccaccgc ctggagcaac 600
 tcgatcggca acgctcggcc tggaaaggcc ggctggacga ctatttcg 648

40

<210> 502
 <211> 405
 <212> DNA
 <213> Pseudomonas aeruginosa

45

<400> 502
 aatgtcggca tcattctcgc caacgaggcg gggcaggtgc tgtgggcgcg gcgtatcaat 60
 caggaagcct ggagttccc gcaggaggc atcaatgatc gcgaaacgcc ggaagaggcg 120
 50 ctgtatcgcg aattgaacga agaagtcggg ctggaggccg gggacgtgcg catcctggcc 180
 tgcacccgcg gctggctgcg ctaccgtttg ccgcagcgcc tgggtgcggac ccacagccag 240
 ccgtgtgca tcggccagaa gcagaaatgg ttcttgcgtc ggtgatgtc cgacgaggcg 300
 55 cggtgcgca tggatatcac cagcaagccc gagttcgacg gctggcgctg ggtgagttac 360

EP 1 770 171 A1

	tggtaccccc tgggacaggt ggtgaccttc aagcgcgagg tctac	405
5	<210> 503 <211> 542 <212> DNA <213> Pseudomonas aeruginosa	
10	<400> 503 gacctgctgt tccagttgct cggctatctg gccaaagagcg gcggggcgggt ggaggagatg	60
	catatccgcc aggcgcgcga ggagatggcg ttgcgcaagc tcgataggcg agcccagcgg	120
	cgtgccatcg cgtccttcgg caagggcaag gccggcatcg cccatctgca ggcgagggtc	180
15	gcgcgtctga agggcgaaac tgcggaggca gtattgctcg cctgctggcg gatggcctgg	240
	gctggcggcg tgctcagcca gtcggcgcg caactgggtgt tgcaatgggg gcgctggctg	300
	ggttggtcgg cggagcgaac ggaacgcttg tcggcgcggg tcatgccgaa gcggacgcgc	360
20	gctgtcgccc gggatagcta ccgtgaggcc ctgctgctgc tcggcgtgga ggccggaagc	420
	gagccggcgc tgatcaaacg cgctatcgc aagctgatca gccagcatca tccggacaaa	480
25	ctggcgggag ccggcgccag cgtcgagcgc gtgcgtgcgg ctaccgagaa aaccctgaa	540
	tt	542
30	<210> 504 <211> 427 <212> DNA <213> Pseudomonas aeruginosa	
35	<400> 504 cctgctcaac accttctatc cgcagttgcc ggcggtggcg cgtttcatcg aactgggccc	60
	ccagttgcac caccggcgcg gcatccgcca cctggacgcg gcctgcgggg tgcaggtcgg	120
	tttcgccacc ctggacatcc tcgccgcgtt gctggagggc gtcggccctt ggctgcgtgga	180
40	gtcgccctcg aacgacctgt cggcgatgcg cgggctgtcc ctggtgttg cggaagtgcc	240
	gttgagcctg cacgtgctca acgaactggc ggccgccgac gatgggcgca tgaccttgtt	300
	gcagcgcgtc agcctgacca ccgatcgcg cacgctgagc ctgctcagcc cccatggccc	360
45	gttggtgttg acgcctgcgg tggcggtaac ggcagaggat gacgacggcc tgttcgcgtt	420
	gttcgac	427
50	<210> 505 <211> 417 <212> DNA <213> Pseudomonas aeruginosa	
55	<400> 505 gttgaaaggg ttaccgaca acctggaatt gcggcgggcg aaccgtgcc cggtcgagca	60
	ctacatgcgc atgaaggggg ccgaacgggt gcagcggcac agcctgttcg tcgaggacgg	120

EP 1 770 171 A1

	ctgcgcgcggc aactggacca cgaaagcgg cgaacccctg gttttccggg gccatgagag	180
5	cctcaggcgg ctcgcgcgagt ggctcgagcg ctgcttcccc gactgggagt ggcacaacgt	240
	gcgcatcttc gagaccgagg atccgaacca cctctgggtc gagtgcgacg ggcgcggcaa	300
	ggcgctggtc ccgggggtatc cgcagggcta ttgcgagaac cactacatcc attccttcga	360
10	actcgagaac ggccggataa aacgcaatcg cgagttcacg aacccgatgc agaaatt	417
	<210> 506	
	<211> 356	
	<212> DNA	
15	<213> Pseudomonas aeruginosa	
	<400> 506	
	atgctcgata atgctattcc ccaaggtttc gaagacgccg tggagttgcg caggaagaat	60
20	cgcgagacgg tggtaagta tatgaacacc aaaggccagg atcgctgctg ccgccatgaa	120
	cttttcgctg aggacggctg tggcggttta tggaccaccg ataccggctc gcccatcgctc	180
	attcgtggca aggacaagct ggccgagcac gcggtgtggt cgctgaaatg cttcccggat	240
25	tgggagtggt acaacatcaa ggtcttcgag accgacgac ccaaccactt ctgggtcgag	300
	tgcgacggcc acggcaagat cctcttcccc gggatatccg agggttacta cgagaa	356
	<210> 507	
30	<211> 671	
	<212> DNA	
	<213> Pseudomonas aeruginosa	
	<400> 507	
35	gacttcgctg ttcgacttcc agggcgcagg cgatacccag gtcgcccccg acctgaccaa	60
	cgtcccgcag agcgacgcgc gcaaggagga cgctactgg cagcagttct accggcccag	120
	tcccaaatac tggctctacg agcccaagag cctgcccggc caggaaaagg gccagcgccc	180
40	taccctcgcg gtgccctacc agttgcacgc cacgctggcc ctcgacatcg ccgccggcaa	240
	gctgcgcctg accctgggca acgacggcat gagcctgccg ggcaatccgc aggacactgc	300
	cgctgcggta ttccaggtgc agccgcggga agtoggcaat ccgcgcttct ataccgtgac	360
45	cagctatccg gtggtccagg aaagcggaga ggaactgggc cggaccctca acgacgaact	420
	cgacgacctg ctcgacgcca acggccgcta cgccttcgag gtgcacggcc ccaacggctt	480
	cttcgogag ttccaaggca acctgcatct cgcgcgcgag atggcgcggc ccgaggtatc	540
50	ggtcacctat caacgcaacg gcaacctgca gttgaacatc cgcaatctcg gccgcctgcc	600
	gtgcaggcgt gacggtgacg ccgaaccggc cctatacccg ggaggcagcc gtcgctatga	660
	actcgaaccg a	671
55	<210> 508	

EP 1 770 171 A1

<211> 304
 <212> DNA
 <213> *Pseudomonas aeruginosa*

5 <400> 508
 gtgttccagg tggtcgacct gctcgacagc gagaacccgc cgaaacgcta caccgtcggc 60
 gcgcgcaagc gcctgcacga cagcttccag ggcgacgcca gcggcgacta ccacctggaa 120
 10 gtgcacggtc cgaacgggtt cctccgggtc ttctcgggca acctgcggcg cgacctggcg 180
 gacggcaagg cgccgtgcc ggaagtgcgg atcgactacg agccgtgtt cggcaacctg 240
 cggtgcaac tgatcaaccg tggccgccat ccggtcaagc tgacgggtcaa ggacaacgtc 300
 15 tatc 304

<210> 509
 <211> 302
 <212> DNA
 20 <213> *Pseudomonas aeruginosa*

<400> 509
 acaacctgga acagcaactc ggcgagttcg gccgcaacgc cgggcagatg tccgagatcg 60
 25 aacgcaagca ggccgccgaa ggtctgatcg aacagctcaa gcgcgaggtg gcggtcggcg 120
 ccgatccgcg ccagaccttc gaggagatcc agcgtctgac gccctatgtg gaggccgatg 180
 ccaggcgccg cgaggcgctc gacttcgaga tctggatggc gctcaaggac aacgcctccg 240
 30 tccagcagca agcgcgcgacg cctggcgagg aagagcaact gcgcgaatac gcgcaagagt 300
 cg 302

<210> 510
 35 <211> 722
 <212> DNA
 <213> *Pseudomonas aeruginosa*

<400> 510
 40 gtcaaggggtg ttgtctgccg tgccctgctg ggcgctggtc gcgaggtgcc ggagtgggac 60
 gatattggtt cggaatacgc cgagcaattg ctgcaggagc accccgaagg ggttttcaac 120
 ctggcgggat ggtcgctcgg cggcaacctg gcgatggatg tcgcggcccg gctggagcag 180
 45 cgtgggcggc aggtggcttt cgtcggctgg atcgatgcac cggcaccggt cagggtcgaa 240
 gcgttctgga acgagatcgg gccgacgccg gaggcagtc cgaacctatc cgtgggcgag 300
 atgcgggtgg aactgctcgg tgtcatgttt ccgagcggg cgcagcatat cgaacgggcc 360
 50 tggatcatga tctgctccgc cagcagggac gatgagcagc gctggacgag gatgagcgac 420
 tgggcggaag cggagatcgg cgccgagttc gcgacactgc gcagcgaaat cgcacagagc 480
 aacgaactgg aagtgtcctg ggagttgaaa cagatcctcg acgagcgcc gaaagcgatg 540
 55 gattaccgcg gtctgacggc gaaggtcagc ctctggtggg ccgcgcgcag caccaatgcc 600

EP 1 770 171 A1

	atccagcgga gcgcggtgga gcgctcgatg gccgaggcga tgggggctga gcgtgtcgaa	660
	ccggtgcggg tgctggatac ccggcacgac aagatcatcg accaccctga gtttgtgcag	720
5	ag	722
	<210> 511	
	<211> 616	
10	<212> DNA	
	<213> Pseudomonas aeruginosa	
	<400> 511	
	aagtcggtac tggagtcctt ggtggaggcg ctgaaccaga ctgcgctggg cgatgcctac	60
15	gagctcgtgg gcgtgatcta cgacgacgac gccgagctgc ctgcgacca gggaaaaatc	120
	aaggactacg gtttcgccta tcgtcccggt cagcaatggt tctatccggc agacctgcag	180
	gtgcaaggca agaccctgaa cgacctcttg ctgagcgtgc cgtccacctc ccgtcggtag	240
20	ccgcggggta ccccgagca tgtggccggc aagagcgatt tcgagcgacg cctgcatgac	300
	accctggtgg agctggggcg cgatgtggtg gtattggacg ggtcctcgtg catcctcgat	360
	gagctggtac gcccgggcg tccgttcgca cggcggatca tgaatatcca tcctggcgtg	420
25	acgcgcgagg actcgacctt cgagcgtcgt ggcgcctatg cgaccctgga cgcgttgat	480
	ggagcgcggg gcgagaaggt ggtggattgg gcgaccatgg aaaaggtcgc ggtcgagccg	540
	ctgtactgga ccggagcact cgttcactat gtggacaatg gcatcgattc cggcgaagtg	600
30	ttccatgatg tgctga	616
	<210> 512	
	<211> 741	
35	<212> DNA	
	<213> Pseudomonas aeruginosa	
	<400> 512	
	cttcagttcc gagatgccga gaaaaaactt gaggcgtcgg tacaagccga gctggataag	60
40	gctgatgccg ctcttggtcc ggcaaagaat cttgcacatc tggacgtcat caaccgcagt	120
	ctgaccatcg ttggaaacgc cctccagcaa aagaatcaaa aactactgct gaatcagaag	180
	aagattacca gcctgggtgc aaagaatttc cttaccgta cggcgggaaga gatcggtgaa	240
45	caagcgggtg gagaaggcaa tattaacggg cctgaagcct atatgcgctt cctcgacagg	300
	gaaatggaag gtctcacggc agcttataac gtaaaactct tcaccgaagc gatcagtagt	360
	ctccagatcc gcatgaatac gttgaccgcc gccaaagcaa gtattgaggc ggccgcagca	420
50	aacaaggcgc gtgaacaagc agcggctgag gccaaacgca aagccgaaga gcaggcccg	480
	cagcaagcgg cgataagagc tgccaatacc tatgccatgc cggccaatgg cagcgttgct	540
	gccaccgcgg caggccgggg tctgatccag gtcgcacaag gcgccgcac ccttgctcaa	600
55	gcgatctccg atgcgattgc cgtcctgggc cgggtcctgg ctccagcacc ctccggtgatg	660

EP 1 770 171 A1

	gccgtgggct ttgccagtct gacctactcc tcccgactg ccgagcaatg gcaggaccaa	720
5	acgcccgata gcgttcgtta c	741
	<210> 513	
	<211> 211	
	<212> DNA	
10	<213> Pseudomonas aeruginosa	
	<400> 513	
	atatacggaa aaagagtttc ttgagtttgt tgaagacata tacacaaaca ataagaaaaa	60
	gttccctacc gaggagtctc atattcaagc cgtgcttgaa tttaaaaaac taacggaaca	120
15	cccaagcggc tcagaccttc ttctactacc caacgaaaat agagaagata gccagctgg	180
	agttgtaaag gaagttaaag aatggcgtgc t	211
20	<210> 514	
	<211> 589	
	<212> DNA	
	<213> Pseudomonas aeruginosa	
	<400> 514	
25	tatacggctt cagactttcc tcagaagtca gagtcgatgt accagagtca gttgctggcc	60
	agccgaaaat tctatggaga gttcctggat cgccatatga gtgagctggc caaagcgtac	120
	agcgccgata tctataaggc gcaaatcgct atcttgaaac aaacgtctca agagctggag	180
30	aataaagccc ggtcattgga agcagaagcc cagcgagccg ctgctgaggt ggaggcggac	240
	tacaaggcca ggaaggcaaa tgtcgagaaa aaagtgcagt ccgagcttga ccaggctggg	300
	aatgctttgc ctcaactgac caatccaacg ccagagcagt ggcttgaacg cgctactcaa	360
35	ctggttacgc agcgatcgc caataagaag aaattgcaga ctgcaaacia tgccttgatt	420
	gccaaaggac ccaatgcact ggagaaacia aaggcaacct acaacgccga tctcctagt	480
40	gatgaaatcg ccagcctgca agcacggctg gacaagctga acgccgaaac ggcaaggcgc	540
	aaggaaatcg ctcgtaagc ggcgatcagg gctgccata cttatgcc	589
	<210> 515	
45	<211> 710	
	<212> DNA	
	<213> Pseudomonas aeruginosa	
	<400> 515	
50	atccagtata ttctgctcg atcaagctac ggtactccac catttgccc accaggacca	60
	agtccgtatg tcggtactgg aatgcaggag tacaggaagc taagaagtac gcttgataag	120
	tcccattcag aactcaagaa aaacctgaaa aatgaaaccc tgaaggaggt tgatgaactc	180
	aagagtgaag cggggttgcc aggtaaagcg gtcagtgcc atgacatccg cgatgaaaag	240
55	agtatcggtg atgcaactcat ggatgcaaaa gcaaaatcgc taaaggccat tgaggatcgc	300

EP 1 770 171 A1

	ccggccaatc tttatacggc ttcagacttt cctcagaagt cagagtcgat gtaccagagt	360
5	cagttgctgg ccagccgaaa attctatgga gagttcctgg atcgccatat gagtgagctg	420
	gccaaagcgt acagcgccga tatctataag gcgcaaactg ctatcttgaa acaaacgtct	480
	caagagctgg agaataaagc ccggtcattg gaagcagaag cccagcgagc cgctgctgag	540
10	gtggaggcgg actacaaggc caggaaggca aatgtcgaga aaaaagtgca gtccgagctt	600
	gaccaggctg ggaatgcttt gcctcaactg accaatccaa cgccagagca gtggcttgaa	660
	cgcgctactc aactggttac gcaggcgatc gccataaga agaaattgca	710
15	<210> 516 <211> 752 <212> DNA <213> Pseudomonas aeruginosa	
20	<400> 516	
	tcgccaataa gaagaaattg cagactgcaa acaatgcctt gattgccaag gcacccaatg	60
	cactggagaa aaaaaaggca acctacaacg ccgatctcct agtggatgaa atcgccagcc	120
25	tgcaagcacg gctggacaag ctgaacgccg aaacggcaag gcgcaaggaa atcgctcgtc	180
	aagcggcgat cagggtgccc aatacttatg ccatgccagc caatggcagc gttgtcgcca	240
	ccgcccagc ccggggctctg atccaggctg cacaaggcgc cgcattccctt gctcaagcga	300
30	tctccgatgc gattgccgtc ctgggcccggg tcttggtctc agcaccctcg gtgatggccg	360
	tgggctttgc cagtctgacc tactcctccc ggactgccga gcaatggcag gaccaaacgc	420
	ccgatagcgt tcgttacgcc ctgggcattg atgcgctaa attggggctt cccccaagcg	480
35	taaacctgaa cgcggttgca aaagccagcg gtaccgtcga tctgccgatg cgctgacca	540
	acgaggcacg aggcaacacg acgacccttt cgggtggtcag caccgatggt gtgagcgctc	600
	cgaagccgt tccggtccgg atggcgccct acaatgccac gacaggcctg tacgaggtta	660
40	cggttccctc tacgaccgca gaagcgccgc cactgatect gacctggacg ccggcgagtc	720
	ctccaggaaa ccagaacctc tcgagtacca ct	752
45	<210> 517 <211> 739 <212> DNA <213> Pseudomonas aeruginosa	
50	<400> 517	
	atcgttctgg tcttctctgc agcgttggtg tggatgctga gtgcaggcag tatctccggc	60
	ggctgggggg gggcgatgct ggggtgcaggt tctggcggtg cactgttagg gttcctggat	120
	gaccatgggc acattgctgc gcgttgggcg ctgctcggcc atttctcagc agcgatatgg	180
55	atcttgctgt ggacgggtgg tttcccgccg ctggatgtgg ttgggcattg tgtcgactta	240

EP 1 770 171 A1

	ggatggctgg gccacgtatt ggcagttttc tatttggtat ggggtgctgaa cctttataac	300
	ttcatggatg gcattgatgg tattgccagt gtcgaggcca ttgggtgtctg tgtaggaggg	360
5	gccctgatct actggcttac agggcatgtc gcgatggttg gtatccctct gttgctggcg	420
	tgcgcggctg ccggcttcct gatctggaac ttccctccag ctogaatctt catgggtgat	480
	gcggggagtg gttttcttgg tatggttatt ggtgcactag ctattcaggc tgcattggacc	540
10	gccccctcgc tgttctggtg ctggttgata ttgctgggag tgttcatcgt tgatgcaacc	600
	tatactctga tccgcgggat cgcagaggg gagaaattct atgaggcgca tcgcagccac	660
	gcttatcagt ttgcctcgcg tcgttatgct agccatctgc gggttacctt ggggtgttctg	720
15	gctatcaaca ctctttggt	739
	<210> 518	
	<211> 756	
20	<212> DNA	
	<213> Pseudomonas aeruginosa	
	<400> 518	
	agtctgttgg tatcggtttg caagggcctg cgggtacatg tcgagcgctg tgggcaggat	60
25	cccgggcgca gcacggtgat gctgggtcaac ggcgcgatgg cgaccaccgc ctcgttcgcc	120
	cggacctgca agtgccctggc cgaacatttc aacgtgggtg tgttcgacct gcccttcgcc	180
	gggcagtcgc gtcagcaciaa cccgcagcgg gggttgatca ccaaggacga cgaggtggaa	240
30	atcctcctgg cgtgatcga gcgttcgag gtcaatcacc tgggtctcgc gtctggggc	300
	ggtatctcca cgtgctggc gctgtcgcgc aatccgcgcg gcatccgcag ctcggtggtg	360
	atggcattcg cccctggact gaaccaggcg atgctcgact acgtcggggc ggcgcaggcg	420
35	ctgatcgagc tggacgaciaa gtcggcgatc ggccatctgc tcaacgagac cgtcggcaaa	480
	tacctgcgc cgcgcctgaa agccagcaac catcagcaca tggcttcgct ggccaccggc	540
	gaatacgagc aggcgcgctt tcacatcgac cagggtgctg cgtcaacga tcggggctac	600
40	ctggcttgcc tggagcggat ccagagccac gtgcatttca tcaacggcag ctgggacgaa	660
	tacaccaccg ccgaggacgc ccgccagttc cgcgactacc tgccgcaactg cagtttctcg	720
45	cgggtggagg gcaccgggca tttcctcgac ctggag	756
	<210> 519	
	<211> 473	
	<212> DNA	
50	<213> Pseudomonas aeruginosa	
	<400> 519	
	aacgctttct cgatcagggc agccggccgc tgggtgttcac ccagggctcg accgaacacc	60
	tgcagggcga cttctacgcc atggccctgc gcgcgctgga acgcctcggc gcgcgtggga	120
55	tcttctctac cggcgccggc caggaaccgc tgcgcggctt gccgaaccac gtgctgcagc	180

EP 1 770 171 A1

	gcgccctacgc gccactggga gccttgctgc catcgtgcgc cgggctggtc catccgggcg	240
5	gtatcgggcgc catgagcctg gccttggcgg cgggggtgcc gcagggtgctg ctgccctgcg	300
	cccacgacca gttcgacaat gccgaacggc tggctcggct cggctgcggg atgcgcctgg	360
	gcgtgccatt gcgcgagcag gagttgcgcg gggcgctgtg gcgcttgetc gaggaccgg	420
10	ccatggcggc ggctgtcgg cgtttcatgg aattgtcaca accgcacagt atc	473
	<210> 520	
	<211> 459	
	<212> DNA	
15	<213> Pseudomonas aeruginosa	
	<400> 520	
	ttcgattact acgcctatgg cgtgcgccac acgattccct tcacccggcc gaagaccgag	60
20	gtccatggca cctatcccaa ggctggctg gagegatacc agatgcagaa ctacggggcc	120
	gtggatccgg cgatccctcaa cggcctgcgc tcctcgga aa tgggtggtctg gagcgacagc	180
	ctgttcgacc agagccggat gctctggaac gaggctcgcg attggggcct ctgtgtcggc	240
25	gcgaccttgc cgatccgcgc gccgaacaat ttgctcagcg tgctttccgt ggcgcgcgac	300
	cagcagaaca tctccagctt cgagcgcgag gaaatccgcc tgcggctgcg ttgcatgac	360
	gagttgctga ccagaagct gaccgacctg gagcatccga tgctgatgtc caacccggtc	420
30	tgctgagcc atcgcgaacg cgagatcctg caatggacc	459
	<210> 521	
	<211> 519	
	<212> DNA	
35	<213> Pseudomonas aeruginosa	
	<400> 521	
	ccctattcc atacottacc tatatgccc gtccggcat caataaattt gatcttctg	60
40	aaggggcgaa aatcaaggat ctgattaagc gctatcagta tattgggttcg caaatcccg	120
	cagcaatcat gattcgtggt gtgcaggaag agatcaaaaa atccacgaac actgccttgg	180
	ccaatgtggg ggcaattgtc gatggcgaac tggcgtatct tgctagccag aaaaaggaaa	240
45	aattaaatcc tgccgaggcg acacccttgc agatggcctc tgctgaaaag gccgcggcgg	300
	tggaactgct tgcgtccaaa cagaaggaac tggctgacgc acgaaccatt gcaaattgcat	360
	tctttggcta tgaccctctc acggtcaatt atgttaatgt aatgaatgaa atctacggc	420
50	gccgcgaaga taaagatttc agtttcgaca actggctgaa gtcttattca gccgcacaaa	480
	agatccgctt gatcgaagcg aaaatcagcg tcctcaata	519
	<210> 522	
55	<211> 417	
	<212> DNA	

EP 1 770 171 A1

<213> Pseudomonas aeruginosa

<400> 522

5 gtgcgctaca gctacacgcg ccaggcgcgcg ggcagttggt cgctgaactg gctgggtgccg 60
atcgccacag agaagccttc gaacatcaag gtgttcaccc acgaactgaa cgccggtaac 120
cagctcagcc acatgtcgcc gatctacacc atcgagatgg gcgacgagtt gctggcgaag 180
10 ctggcgcgcg atgccacctt ctctgtcagg gcgcacgaga gcaacgagat gcagccgacg 240
ctcgccatca gccatgccgg ggtcagcgtg gtcattggccc aggccagacc gcgccgggaa 300
aagcgtgga gcgaatgggc cagcggcaag gtgttgtgcc tgctcgaccc gctggacggg 360
15 gtctacaact acctcgccca gcagcgtgc aacctcgacg atacctggga aggcaag 417

<210> 523

<211> 573

<212> DNA

20 <213> Streptococcus pneumoniae

<400> 523

actcttggtc tgattttggg tgactctaag ctgatacctg ggtcaggagt gaacattgaa 60
25 aagtatcttg tgcaacagta tccaaatggt ggaaatggaa ttcaaggaga aacaatcggt 120
tttaatttta ttggtaggat attaaaagaa aaaggtatag atacttatct ggctgctgcc 180
caaattatta agagtcgata tcccaaaaca gagtttaata ttattggctt tatagaaccg 240
30 acagagagta attatgaact taaaatttgt gacttagaaa aaaaaggaat cgtttattat 300
ttgggacaac aaaaagatgc gatacctcat attaccggtt cccatgcaat tatccatccc 360
agtgtgtatg gtgaaggaat gagcaatgta ttactagaaa acgctagtgc aggacgtggt 420
35 ttaattacga cagataatcc aggttgcaaa gaaattgtta aagatagaga gacaggctat 480
atatattcaag ggggaaatgt tgaggaacta gtctctatat tggaagtttt tttagggtcta 540
gaaaatgaaa aacgaaaaga gatgggactt caa 573

<210> 524

<211> 535

<212> DNA

40 <213> Streptococcus pneumoniae

<400> 524

aaatattggt ggtttacttc gtgcaaatac ttgcttgata ttattaaaag tgtgtcgaaa 60
caaggatctt acttttcatt atttttttaa atttggaag aatgtaactg togaacagga 120
50 atctaattgct aaattaatct taggaaaaaa gattagagta aacgccgggg gagtattgaa 180
agttagaaaa ggagcaaac tcaagatttc tgatgatgta tttttgagta ataattgtat 240
gatagcttgt cgtaaatata tagatattaa atctggagta aaatgtggtc ctggagtact 300
55 tatatatgat catgactatg atgttagtgt tccagggtga ttgaaagcaa aaaaatttaa 360

EP 1 770 171 A1

	gacggcccca gttatgattg gagaaaatgt ttggattgga gctaacagca ttgtcttgaa	420
	gggagtgagt attggtgaga atagtgtggt tgcagcagga agtggtgtaa caaaggatat	480
5	tccagctgat actatattta ttcagaaacg tttatcaagg gagatgaaat tatga	535
	<210> 525	
	<211> 691	
10	<212> DNA	
	<213> Streptococcus pneumoniae	
	<400> 525	
	ctaaagcatt tggagagatt gtactatgta gtcgttatga gaagggtgaa tcataccctg	60
15	aaggatatca taaagcgaac tttattaata aatttatccc tatagaaggt ctacatcagg	120
	ttctatttgg tcaaaataaa aataagatta ttgaaggaat gattgatagc gacttaatag	180
	ttgttcgtat tccgtctata attggatcaa aaactgcaga ctacgcattg aagataggta	240
20	agccgtatct gacagaaata atgggggatg cttgggattc ttactgggtat catagtttaa	300
	agggaaaatt attagctcca tatatatagc ccaaaactaa atcaattgta aaaaacgcta	360
	attattgcat atacgtgaca gaaaaatatt tacaagatag atatccta attaaatcta	420
25	atatacgttgc ttcaaatggt aatattacct ctgtagagaa tagatctttg aagagccgtc	480
	tttataagtt gaaaaaattt aatcctcaa aaatttcaat aatgacaaca gcatctgtga	540
	atgtacgagc caagggccat agatttgtat tggaagcaat gaagagatta gaaatacaag	600
30	gtattttggt ggattattat ttagcagggt atggtgatca aagtttctta aaaaagaaag	660
	cagaggaatt gggagtagcg aatagaatcc a	691
35	<210> 526	
	<211> 509	
	<212> DNA	
	<213> Streptococcus pneumoniae	
	<400> 526	
40	tgtaggaact gatttggatg attctgagtt aacaaaaaga gcatggcagt ttgcagatct	60
	acttaaaggt ggagctatta aggaagaggt tccgatactg gttgttgctt ttaatgaagc	120
	agaggttgca aaattgttta gtaacactta cttggcaact cgcgtacgtt attttaatga	180
45	gatagataca tatagcgagg taaaagggt taatcccaag acaattattg atattgtttg	240
	ttatgatcct agaattggat catactataa taaccctagc tttggttacg gagggattg	300
	cttacaaaaa gacacaaagc aattgaaagc aagttttagg gatgttcctg aaaatctgat	360
50	tacagctgtg gtgcaatcta ataaaacaag aaaagattat atagctggag ctattctagc	420
	taaaacaact agtggtgtag gtatttatag attaattatg aaatctgatt ctgataattt	480
55	tcgttctagt gctgttaagg gagttatgg	509

EP 1 770 171 A1

<210> 527
 <211> 695
 <212> DNA
 <213> Streptococcus pneumoniae

5

<400> 527
 tttccagaca taaaccatcc gaaattattg tggttattaa cggcccaaaa aacgagagac 60
 ttgtaaaact ttgtcatgat tttaatgaaa aattagaaaa taatatgact ocaattcaat 120
 10 gttattacac tcctgttcct ggcaagagaa atgctatcct ctttgggctg gagcatgtgg 180
 attcgcagag tgatattaca gttctagtag atagtgatac agtatggacg cctagaacct 240
 tgagtgagtt gctgaagcct tttgtttgcg ataaaaaaat aggtggggta acgacaagac 300
 15 aaaaaattct tgaccctgag cgtaatctcg tgacaatgtt tgctaacttg ttagaggaaa 360
 ttagggcaga aggaactatg aaagcaatga gtgtgactgg taaagtaggg tgcttacctg 420
 gtcgaacaat tgctttttaga acagagattc tcagagagtg tatacatgag tttatgaatg 480
 20 agactttcat gggatttcat aaggaagttt ctgatgatag aagtcttaca aatttgactt 540
 taaaaaaagg ctataaaact gttatgcagg atacttctgt tgtgtataca gatgctccta 600
 caagttggaa aaagttcatt agacagcaac taaggtgggc agaaggttct cagtataaca 660
 25 atctaaagat gactccttgg atgattagaa atgcc 695

<210> 528
 <211> 542
 <212> DNA
 <213> Streptococcus pneumoniae

30

<400> 528
 tcgtcatctg tactgggtctg ggcttgcttg taggaggatt tttcctgcta aaaccagctc 60
 35 cacaaacacc tgtcaaagag acgaatttgc aggetgaagt cgcagctgtt tccaaggatt 120
 tggtatccga aaaggaagtg aacaaggaag aaaaggaaga accccttgaa caagatctaa 180
 40 tcacagtaga tgtcaaaggt gctgtcaaat cgccagggat ttatgacttg cctgtaggta 240
 gtcgaatcaa tgatgctgtt cagaaggctg gtggcttgac agagcaagca gacagcaagt 300
 cgctcaatct agctcagaaa gttagtgatg aggctctggg ttacgttcct actaaggag 360
 45 aagaagcagt tagccaacag actggtttgg ggacagcttc ttcaataagc aaggaaaaga 420
 aggtcaatct caacaaggcc agtctggaag aactcaagca ggtcaaggga ctgggaggaa 480
 aacgagctca ggacattatc gaccatcgtg aggc aaatgg caagttcaag tcagtagacg 540
 50 ag 542

<210> 529
 <211> 545
 <212> DNA
 <213> Streptococcus pneumoniae

55

EP 1 770 171 A1

	<400> 529	
	gtggaaatct gctggtaaag ttctaataat ttgcggaatc tttggatttt ggtttgtttt	60
5	tcaaaattgg caacagagtc aagcgagtc aaatctggcg gattctgttg aaagggtagc	120
	gattctgcct gacactgtta aggtcaatgg tgatagtctg tcttttcgcg gcaaggctga	180
	tggacgcatt tttcaagtct attataaact ccagtcgag gaggagaaaag aagcctttca	240
10	agctttaacc gacctgcatg agataggact agaagggaag ctttcggagc cagaagggca	300
	gagaaatttt ggtggcttta attaccaagc ctatctgaag actcagggaa tttaccagac	360
	tctcaatatc aaaaaaatcc agtcacttca aaagattggc agttgggata taggagaaaa	420
15	cttgtccagt ttacgtcgaa aggtctgggt ttggattaag acgcactttc cagaccctat	480
	gcgcaattac atgacaggac tcttgctggg acatctggac accgactttg aggagatgaa	540
	tgagc	545
20	<210> 530	
	<211> 402	
	<212> DNA	
	<213> Streptococcus pneumoniae	
25	<400> 530	
	gattatcgga gaaattcgtg acagcgagac ggcgcgtgca gtggtcagag ctagtttgac	60
	aggtgcgaca gtcttttcaa ccattcacgc caagagtatc cgagggtgtt atgagcgtct	120
30	gctggagttg ggtgtgagtg aagaagaatt ggcagttgtt ctgcaaggag tctgctacca	180
	gagattaatc gggggaggag gaatcgttga ctttgcaagc agagattatc aagaacacca	240
	agcagccaag tggaaatgagc aaattgacca gcttcttaaa gatggacata tcacaagtct	300
35	tcaggctgag acggaaaaaa ttagctacag gctaagcaaa aaaatatcat caccctat	360
	aacaatctct tttctagcgg ttttcatctg gtggagacta tc	402
40	<210> 531	
	<211> 463	
	<212> DNA	
	<213> Streptococcus pneumoniae	
45	<400> 531	
	tggacaagca gtgtgtgacc cagatgcgtg tgggcttgct tcaggggaaa tcattctcag	60
	aaatgatgga aagtttgga tgttcaagtg ctattgtcac tcagttatcc ctagctgaag	120
	ttcatggcaa tctccacctg agtttgggaa agatagaaga atatctggac aatctggcta	180
50	aggtcaagaa aaaattgatt gaagtagcga cctatccctt gattttgctg ggttttcttc	240
	tcttaattat gctggggcta cggaattacc tgctccaca actggatagt agcaatattg	300
	ccacccaaat catcggtaat ctgccccaaa tttttctagg catggtaggg cttgtttccg	360
55	tgcttgccct tttagcactc actttttata aaagaagttc taagatgagt gtcttttcta	420

EP 1 770 171 A1

	tcttagcacg ccttcccttt attggaatct ttgtgcagac cta	463
5	<210> 532 <211> 322 <212> DNA <213> Streptococcus pneumoniae	
10	<400> 532 aaaaatgatg acattcttga aaaaagctaa ggttaaagct tttacattgg tggagatggt 60 ggtggtcttg ctgattatca gcgtgctttt cttgctcttt gtacctaatc tgaccaagca 120 aaaagaagca gtcaatgaca aaggaaaagc agctgttggt aagggtggtg aaagccaggc 180 agaactttat agcttagaaa agaataaga tgctagccta agaaagtac aagcagatgg 240 acgcatcacg gaagaacagg ctaaagctta taaagaatac catgataaaa atggaggagc 300 aaatcgtaaa gtcaatgatt aa 322	
20	<210> 533 <211> 380 <212> DNA <213> Streptococcus pneumoniae	
25	<400> 533 atgctggaag gtctcttggt tttgggactt gtgagtatcc ttgccttggg cttgtccggc 60 tctgtccagt ccactttttc agcggtagag gaacagatct tctttatgga gtttgaagaa 120 ctctatcggg aaacccaaaa acgcagtgtg gctagtcaac aaaagactag tttgaacttg 180 gatgggcaga tgattagcaa tggcagtcaa aagttgacag ttcttaaagg aattcaggca 240 ccatcaggcc aaagtattac atttgaccga gctgggggca attcgtccct ggctaagggt 300 gaatttcaga ccagtaaagg agcgattcgc tatcaattat atctaggaaa tggaaaaatt 360 aaacgcatta aggaaacaaa 380	
40	<210> 534 <211> 547 <212> DNA <213> Streptococcus pneumoniae	
45	<400> 534 ggctgtagga gacaatgaag ttctgtctct gtctttgctt gagattgcca gtcaacgtag 60 cagtctggtg attttgacag gcggtttggg ggcaactgag gacgacctaa ccaaacaac 120 cctagctaaa tttttaggga aagcattagt ctttgatcct caggctcagg agaagttgga 180 tatctttttt gcctgcgac cagactatgc ccgaacaccg aataacgaaa gacaagctca 240 aattgtagaa ggagcgattc cactgcaaaa cgaaacagga ctggctgttg gaggaaaatt 300 agaagtagac ggagtgcct atgtcgtcct tccaggcccg ccaagtgaat tgaaacccat 360 ggtcttaaac caacttctac ccaagttgat gacagggagc aagctgtatt cccgagttct 420	

EP 1 770 171 A1

	tcgtttctttt gggattggcg agagccagtt ggttacgatt ttggctgatt taattgataa	480
	tcagatcgat cctaccttgg ccccttatgc caagacagga gaagtcactc tacgtctgtc	540
5	aacaaag	547
	<210> 535	
	<211> 520	
10	<212> DNA	
	<213> Streptococcus pneumoniae	
	<400> 535	
	ttgttagaga gacagaactt gaacgttctt cgatggttat actatacctt ctccactttt	60
15	ttgtattcta ttttagttcc tatggtaaca aattttttta aagaggggtac ctagttgagt	120
	ttaatagtac tataagatat atttttttct ttgcaatagc tataagtgtt ttaaactttt	180
	ttatagcgga acggttttagt atctctagaa gaggaatggg atacttctta actttagaag	240
20	gaatatcctt atacttggtt aatttcttag taaagaaata ttggaagcat gtgtttttta	300
	atccaaaaaa tagcaagaaa attttactgt taacagtaac ggaaaatata gaaaaagttc	360
	ttgataaatt gctagaatct gatgaacttt catggaaact ggtagcagta agtgtttttg	420
25	ataaatctga ttttcaacat gataaaatac ctgtaattga aaaggaaaaa attattgaat	480
	ttgcaacgca tgaagtgtg gatgaggtgt ttgtcgatct	520
	<210> 536	
30	<211> 210	
	<212> DNA	
	<213> Streptococcus pneumoniae	
	<400> 536	
35	aatatatttat ccatgttatt atcctactaa tcgtaatcta aaaaatctta ttaaaaatac	60
	gattcttgct ttcaaaattt tgagaaagga acgocctgat attatcgtct catcaggggc	120
	agctgtagca gttcctttct tttatctagg gaaaatattt ggtgctaaga cagtctatat	180
40	agaagtattt gatagaattg atgctccgac	210
	<210> 537	
	<211> 405	
45	<212> DNA	
	<213> Streptococcus pneumoniae	
	<400> 537	
	tgagggattt attcaggatg atgtttttat tcaaacagga tactctaatt atgttccaaa	60
50	attttgtaaa tgggaaaaat taatatctta tgaaaaaatg aatcaattga ttaaggaatc	120
	agatattatc attaccatg gcggtccagc tacgtttatg gcagttattg cttaaaggtaa	180
	aaatccaata attgttccgc ggctaaaaaa atttggtgag catgtaaatg atcaccagat	240
55	gcaatttgta aaaataacga aagaaatata caatttaata gttatagatg atatttcaga	300

EP 1 770 171 A1

cttacattta attcttcata attttaagga caaacatttt gaaacttatt tgaataacga 360
 gagatttaat gtacgtttca atgtggaaat cagtaacctt tttaa 405
 5
 <210> 538
 <211> 622
 <212> DNA
 <213> Streptococcus pneumoniae
 10
 <400> 538
 tgctttaact cttttaccaa cctatataaa agaaaaacaa gtttttaaaa tagatacacc 60
 gtctttttgt atgggtgctat ggactattat atattctata totataatat ttaattctct 120
 15
 gattgatgga ttggctgttc aagtgttatt ttcagatttg agtaaagcat ttaattggct 180
 aatagcagta tttttttata attattattht gaaaatgcc aatcaatattg acaggataaa 240
 gagatatatg tattataaatt ttactatctt agttgttttt gtoggtttat totatataca 300
 20
 aagaggctcc aatgtaattt tgtttggaag aagtttggtta gactgggacg gatttacatt 360
 agctactagt tatgggtgtaa gatatacagg ttttttagaa tacgcaactt taaatgggtca 420
 gttaattctt tttttattac cgttaattag attgtttaga ttttagatttt ttacacaaac 480
 25
 tatcattttt gcttttcttc tagaggtttt ggtactaagc aaatctagaa tagcgattgt 540
 tgcaatgctt atatatatag catttgcagt agtcaatgag attaattcaa acaataaatg 600
 gcttattgga attttctgtc ca 622
 30
 <210> 539
 <211> 687
 <212> DNA
 <213> Streptococcus pneumoniae
 35
 <400> 539
 aaggcaattc caatacaaag cagatcggtta ttattgataa tttttctaata aacggtaacg 60
 gtgaaaaact acaagagctg tatgagtcag attcagagat tgatgtcttg attaaccatg 120
 40
 aaaatgctgg tttcgtcga ggtaataatg tagcatatca gtttgctaag gaaaagtaca 180
 aacctgattt tatggttatc atgaataatg atattgagat agaaacagaa gagtttgaaa 240
 aaatcgtgac agatatctat cggaaaggaaa aattccattt gttaggacca gatattcttt 300
 45
 cgacgacgta tcagcttcac caaaacccaa aacgggtgac gcattatact tatgaagagg 360
 ttaaggctct caatgaaaaa ttaagaaaag ggagccaagt tagtctagca ttaaaaatta 420
 aatgttggtt gaagtctagt aaagtctctc ggacagcaat ctatcaaaat aggcgtaaaa 480
 50
 agaaatcagt agactataga aaacaggtag aaaacccaat tcttcatggg tcgtttattg 540
 tatattctag agatttaatt gagaaagagg agtatgcttt taatcccaat accttcttct 600
 attatgaaac agagatatta gattatgaag ctgagttaaa aggatataag agaatttata 660
 55
 caccgaagat taaggctctg caccatc 687

EP 1 770 171 A1

5 <210> 540
 <211> 534
 <212> DNA
 <213> Streptococcus pneumoniae

10 <400> 540
 tttcaatgcc tctcttggct cttaattcgc ctagtctaaa taccaagatt aaagtgaacg 60
 atcggctcat tgatatccaa ttctggaaaa tagctcttac tattatagtt gacctcatta 120
 ttctatatct ttataggaga gagattcata atcttgcact tagccatggt tatacggggt 180
 caaattttca gtggttcttt agaaatgcta ccagttatga aggtgagcta acagtgcgaa 240
 15 cttcgattcg ggtcctcatt cgtatcattg acgtatctgc ttatatTTTT ggataactt 300
 ttattaataa tttcttcatt tatagtcata aacgctctaa agatttactg ctcttagttc 360
 cattcttgat ttttatttct aaaaccttat tatctggggg tagattggat attataaaaa 420
 20 ttttaattgc gtatgttgta atggcctata ttcagcaaaa acgaaaagtt ggctgggata 480
 aggtcatctc ccataaatat atgagacttg gttttgtagg cttgatagct ggga 534

25 <210> 541
 <211> 450
 <212> DNA
 <213> Streptococcus pneumoniae

30 <400> 541
 tccattagtc aatgagttga aaaaacacga agatatggaa acaattgtgt gtgttactgg 60
 acaacacaaa gagatgggta gtcctgtttt agatttatTTT ggtgttgtag cagattatga 120
 tttgaaaatt atgaaggcta accaaacctt gttctctatc acaactagta tcttggaaaa 180
 35 gataaaacca gttttagaga aggaacaacc agatattgtc ctagttcacg gtgacactac 240
 gacaacttat gcagcagcct tggcagcatt ctatttggga attaaagtag gacatgttga 300
 agctgggttg cgaacgtaca atttaciaaag tccatttcct gaagaattta acaggcaatc 360
 40 gacatcaatc attgcaactt accatTTTgc tccaactgag ttggctaaag aaaatctctt 420
 aaaagaaggt agagagaatg tttatgtgac 450

45 <210> 542
 <211> 565
 <212> DNA
 <213> Streptococcus pneumoniae

50 <400> 542
 gaagcatacg acaaacttcc aagtgttttc aaagatagaa ttatcgctgg gaaatatcag 60
 gttcttactt atcaatactg tgatacgttg cattgctact ttcctcgact attcctttta 120
 gcagatgaaa gaaaacgttt gggcttgcca cgaaatacca atctaggatt gcatttgatt 180
 55 gatatcattc ctttagatgg agcaccaaat cattcggttt taagaaagat ttacttttTg 240

EP 1 770 171 A1

	aaagtatact ggtatcgttt tttagcaagc ttaggaacaa cttatgttgg cgaccatgtg	300
5	gatatgcatt ccactaagca aaaactaatt attgggttct ttaaaaaact aggatttgca	360
	aaactatttc ctcaaaattc tgtatacaga cgcttgata atctctatag aaagtatgat	420
	tggaaaaagc agaagtatgc ggggactatc aatgcttctt tatttgctaa agaagttatg	480
10	ccagtagaga tttggggaga aggagtagag aagccttttg aggatacctt ctttaaagtt	540
	ccaacggagt atgatoctga cctga	565
15	<210> 543 <211> 662 <212> DNA <213> Streptococcus pneumoniae	
20	<400> 543 gtgatagtga acttgggatt gtctagtatt attcagtaca tttcttattt tatgttgatg	60
	ttgtgtgtat ttttaacatt aattaagaat actctcaacg tgtttgcaaa tagaatcata	120
	tattttttga ttatttcatt ttgttttatt attgggatta atttacaaaa tcttccatta	180
25	tcaagaaaga tttattttatc attctctatg ttaattattt ctagcttacc caccctaccg	240
	ataaagctaa taaataatct cagtgattta agaaggatat catattactt attgcacagc	300
	atatttttat ctgtattttt aggtttgggt tttaaaatat ctttagtaac agttgctgta	360
30	gagggaattg gcttttcata tggttttaat ggaggtttga ctcataaaaa tttttatgca	420
	attacaattt tagtttccta tattctacta tatgtcagca gaaaatatga cgctaaacat	480
	cagattgata gttttgtatt atgggttagat ctttttttac ttttaatatc taatacgcga	540
35	acagtttata taatactagt tgttttttgg attattatta atagaaattt tataaataat	600
	attaaaaaag agcatagact ggtagtgaca gcaacgacaa tagtcatctc tttactggcg	660
40	tt	662
45	<210> 544 <211> 380 <212> DNA <213> Streptococcus pneumoniae	
	<400> 544 agagcaaaaa cgctggtttc tcaacaggtc aaccttgggt ggcggttaat ccaaattacg	60
	agatgatcaa cgtacaagaa gcgctggcaa atccagattc tattttctat acctatcaga	120
50	aactgggtcca aattcgcaag gagaatagct ggctaattcg agctgacttt gaattgcttg	180
	atacgggtga taagggtctt gcttatatac gtaaggatgg cgaccgtcgc ttcttagttg	240
	tggctaactt gtccaatgaa gagcaagact tgacagtaga aggaaaagtc aaatctgtct	300
55	tgattgaaaa caccctagct caagaagtct ttgaaaaaca aatcttagtt ccatgggatg	360

EP 1 770 171 A1

ctttctgtgt ggaattacta 380

5 <210> 545
<211> 610
<212> DNA
<213> Streptococcus pneumoniae

10 <400> 545
acgaacagtg gacctgatac atgggtccgat tcttccctcg ctcttaagct tcacctttcc 60
aatcttgcta tcaaataattt ttcaacagct ctataacact gctgatgtct tgattgttgg 120
acgatttctt ggtcaagaat ccttggtctgc agtaggagcg acgacagcga tttttgacct 180
15 gattgtaggc ttacacttg gtgttgga tggcatgggg attgtcattg ctcgttatta 240
tggggctcgg aatttcacta aaatcaagga agcagtagca gccacctgga ttttaggtgc 300
tcttttgagc attctagtta tgttgctggg ctttcttggc ttgtatcctc tcttgcaata 360
20 cttagatact cctgcagaaa ttcttctca atcttatcaa tatatttcta tgattgtgac 420
ctgtgtaggt gtcagctttg cttataatct ttttgcaggc ttgttgcggt ctattggtga 480
cagtctagca gccctgggat ttctgatttt ctctgccttg gttaatgtgg ttctggatct 540
25 ctattttatt acgcaattgc atctgggagt tcaatccgca ggacttgcta ccattatttc 600
gcaaggttta 610

30 <210> 546
<211> 546
<212> DNA
<213> Streptococcus pneumoniae

35 <400> 546
ttgtcttgac tggttgtgtc aatgtcgata aaaccacagg tcagccaaca ggatttattt 60
ggaataccat cggagccct atggctgaag ctatcaagta ctctgctact gataaaggctc 120
taggccttgg tgtcgtatc atcatcgtaa ccattatcgt gcgcttgatt atcttgccac 180
40 ttggtatcta ccaatcatgg aaggcaacgc ttactctga aaagatgaac gccctcaagc 240
acgtccttga gccacaccaa acgctctca aagaagcgac tactcaagaa gaaaaactcg 300
aagcccaaca agctctctt gctgctcaaa aagagcacgg tatcagcatg tttggcggtg 360
45 taggatgttt ccctatcctc cttcaaagtc ctttcttctc tgctatctac tttgctgcc 420
aacatactga aggggttgct caagcaagct acctagcat tcctctaggt tctccaagta 480
tgattttggg tgctgtgct ggtgtccttt actatcttca atcgctcctt tcacttcacg 540
50 gagtag 546

55 <210> 547
<211> 262
<212> DNA
<213> Streptococcus pneumoniae

EP 1 770 171 A1

	<400> 547	
	tgcaaaaggt tagaatgatt gcccaaggta gggtagagg agtcggcgtt cgttgggggtg	60
5	tttacagctt ggcacttgaa attggtggca tcacaggteg agtatggaat aacgacgatg	120
	gcacagtgga aatcttagcc caagcagact catctgctat catggcaaaa tttatccaag	180
	aaatccgaaa aggaccgaca cctttttcaa aagtaagcta cttagatgtc aaactaagca	240
10	actttcctcc ctactctgac tt	262
	<210> 548	
	<211> 629	
15	<212> DNA	
	<213> Streptococcus pneumoniae	
	<400> 548	
	gttcggtaat ccagttgaag tcccttttga acattgggaa ctagaacatt gaattccaat	60
20	tctccatccg aagacttggc ttcaatctgt gaagctgagg gaactaaatc ctcgtttgaa	120
	gcgtagtaaa gggttacacg gtaacggaca cgcttgtttt ggtccaaggc tttacgcacc	180
	ttgcttccat agtagttttg accagtcgaa tactoggcct gtgcctgatt tgcccaggct	240
25	gtctgaacag caatgttttt aggattgctt gttgaggcat caaaaccatc caaaccaccg	300
	attaaggcat agcctaacaa atgacctcta tcgactgcat ggggtataaga gccctttaga	360
	ttcttgacct gatgccaaac tggaggagtc caagaagttg aaccattccc agtttcttta	420
30	cgattcttgt actgacgagt ggccttagac aagagggcat tagctacggt tggaacagtt	480
	tccttgocca ctgtctttgt tttattgtca gcgtagggct tacttgaaac cttggcatct	540
	agatttgttt tattaccatt gacgataaaa gcacctgagc cattccactc cagactcccc	600
35	tttatttgac tcttgactgc gtctgttaa	629
	<210> 549	
	<211> 323	
40	<212> DNA	
	<213> Streptococcus pneumoniae	
	<400> 549	
	cgtggaattt ttagaagaac tcttcccagg ctacgaaaac acgtggcggt cttcccaaga	60
45	gcctgcccg aaaggctatg ctggaacat gttcctttat aagaaagaac ttacacctac	120
	tatcagcttc ccagaaatcg gtgccccttc taccatggac ttggaaggtc gtatcatcac	180
	tctagaattt gatgcatttt tcgtaacca agtttacact ccaaacgctg gtgacggtct	240
50	caaacgcttg gaagaacgcc aagtctggga tgccaaatat gctgagtatt tggctgaact	300
	agacaaagaa aaaccagtcc ttg	323
55	<210> 550	
	<211> 206	

EP 1 770 171 A1

<212> DNA
<213> Streptococcus pneumoniae

<400> 550
5 aaaatttggg ggattcagtt agctgcaatt aaaaaaattg gtgttttgag ggaagaacgt 60
ataagcocca atcagctttg gcatgcactg gaaacagatt atgccggaga agaaggtaag 120
gtcattcaag aaatgttgat tcatgatgca cctaagtatg gtaatgatga tgattatgct 180
10 gacaaattgg ttactgctgc ttatga 206

<210> 551
<211> 510
<212> DNA
<213> Streptococcus pneumoniae

<400> 551
20 cctctaaggc tatgatggaa aagattgctg ttgctaagtc aaggacggta gaagaagatc 60
agacaaaagt ctgtgtaact cgctacggca atgttctatg tagtcgtggg tctgtgattc 120
ccctatggat tgatcaaata aagcaaggga atcctataac gattacggaa cctagtatga 180
ctcgttttat tatgtcctta gaagaagcgg tagacctagt tctgtttgct ttgaaaaag 240
25 gaaaaacagg agatatccta gtacagaaag caccagcatg taccattgaa gtgttggcgc 300
aagctgttac ggaacttttt gcacctaatac aagatattaa agtaatcggg attcgccacg 360
gtgaaaagat gtatgaaacg ttgttgacta ctgaagaatg tacgaatgcc attgatttag 420
30 gcggctttta tcgtgtgcct agcgataatac gagatcttaa ctatgataag tatttcaacg 480
aaggggatgc caaacgcaat cccttaatat 510

<210> 552
<211> 589
<212> DNA
<213> Streptococcus pneumoniae

<400> 552
40 tgaaagatgg acgagatagg actcgtccta atttagagat tggagagatt tttcagtatg 60
atcgtgatac agatccgatt ttattagatg aatattgtaa gaaggccgat ttcgtattcc 120
atttagctgg tgtcaatcgt ccacagaatac ctgatgaatt catggaggga aattacggtt 180
45 tttcaagtag attattggag atttttagaaa agtatgaaaa cacttgtcct gttctactct 240
caagttctac tcaagctagt ttagaaggcc gattttcaaa ctctatatat ggacaatcta 300
agctagtagg ggaagaactc ttctttgaat atggaaagaa aacgggagca cctgtcttag 360
50 tttaccggtt cccgaatctt tatgggaagt ggtgccgtcc taactacaat tctgctgtag 420
caactttctg tcataatcta gctcacgatt tacctattca agtaaatgat ccaagtgtag 480
aattggagtt gctgtatatt gatgatttga tacaagagtg tctaactgca ttggaaggaa 540
55 atcctcatcg ttgtaatcta gatggattac aaatcttacc tagcccatc 589

EP 1 770 171 A1

5 <210> 553
 <211> 545
 <212> DNA
 <213> Streptococcus pneumoniae

10 <400> 553
 tacatggatg ctgttggaga tgatcttggg gctactgtag ggaatattat taatacttca 60
 taaaaattga tgaatcaaatt taaaccagat gctttattga ttttagggga taaaaattct 120
 tgtttatoag ctattactgc caagcgttta catattccaa tttttcatat ggaggctggc 180
 aatcgctgta aggatgagtg cctgccggaa gagactaatc gtoggattgt tgatattatt 240
 15 tcagatgtta acttagcata ctctgaacat gcacgtaagt atttacctga gtgtgggtta 300
 cctaaagagc gcacatatgt aacaggttct cctatggcag aagtgttaca taaaaattta 360
 tctgccattg agtcttcaga tatccatgaa cgtttgggat tgaaaaaagg aggttatatc 420
 20 ttactttcag ctcaccgtga ggaaaatatt gatacagata aaaattttat ttctctcttt 480
 acagcaatta atcaattagc tgaaaagtat aatatgccaa tcttatattc ttgccatcct 540
 agatc 545
 25

30 <210> 554
 <211> 250
 <212> DNA
 <213> Streptococcus pneumoniae

35 <400> 554
 catatgggtac atttgattta ttgcattatg gtcatatcaa tcttttgaaa cgtgctaaac 60
 agctaggtga ttatttgatt gtagttgttt caagtgatga gtttaattta aaagaaaaga 120
 ataaagtatg ttactttaac tacgaacaca gaaaaaattt agtagaagct attcgatatg 180
 tcgatttagt aatccctgaa actagttggg aacagaaaaa gtcagatggt aaagactacc 240
 atattgacac 250
 40

45 <210> 555
 <211> 283
 <212> DNA
 <213> Streptococcus pneumoniae

50 <400> 555
 ctccatagtc cctatatctt tgaatttcct gcggatgatg ccctgctct caaggaaaga 60
 atgcctctct tagaggaagt gggcgtcttt ctagcagagt acggagaaaa tcaatttatt 120
 ctacgtgaac atcctatttg gatggcagaa gaagagattg aatcaggcat ctatgagatg 180
 tgcgacatgc tccttttgac caaggaagtt tctatcaaga aataccgagc agagctggct 240
 atcatgatgt cttgcaagcg atctatcaag gccaatcatc gta 283
 55

EP 1 770 171 A1

	<210>	556	
	<211>	284	
	<212>	DNA	
5	<213>	Streptococcus pneumoniae	
	<400>	556	
	cttgggtgcac agagtctcca aaaatcaatt tcagaacaaa cagcttatga aattgatgaa	60	
	gaggttcgtt cattattaaa tgaggcacga aataaagctg ctgaaattat tcagtcaa	120	
10	cgtaaaactc acaagttaat tgcagaagca ttattgaaat acgaaacatt ggatagtaca	180	
	caaattaaag ctctttacga aacaggaaag atgcctgaag cagtagaaga ggaatctcat	240	
	gcactatcct atgatgaagt aaagtcaaaa atgaatgacg aaaa	284	
15			
	<210>	557	
	<211>	627	
	<212>	DNA	
20	<213>	Streptococcus pneumoniae	
	<400>	557	
	aagtaggcga tggttatgtc tttagaggaga atggagtttc tcgttatatc ccagccaagg	60	
	atctttcagc agaaacagca gcaggcattg atagcaaaact ggccaagcag gaaagtttat	120	
25	ctcataagct aggaactaag aaaactgacc toccatctag tgatcgagaa ttttacaata	180	
	aggcttatga ctactagca agaattcacc aagatttact tgataataaa ggtcgacaag	240	
	ttgatattga ggctttggat aacctgttg aacgactcaa ggatgtctca agtgataaag	300	
30	tcaagttagt ggaagatatt cttgccttct tagctccgat tcgtcatcca gaacgtttag	360	
	gaaaacccaaa tgcgcaaatt acctacactg atgatgagat tcaagtagcc aagttggcag	420	
	gcaagtacac agcagaagac gggtatatct ttgatcctcg tgatataacc agtgatgagg	480	
35	gggatgecta tgtaactcca catatgacct atagccactg gattaaaaaa gatagtttgt	540	
	ctgaagctga gagagcggca gccaggcctt atgctaaaga gaaagggttg acccctcctt	600	
40	cgacagacca tcaggattca ggaaata	627	
	<210>	558	
	<211>	784	
	<212>	DNA	
45	<213>	Streptococcus pneumoniae	
	<400>	558	
	gcatctctcg ttatgtcttt gcgaaagatt taccatctga aactgttaaa aatcttgaaa	60	
	gcaagttatc aaaacaagag agtgtttcac aactttaac tgctaaaaaa gaaaatgttg	120	
50	ctcctcgtga ccaagaattt tatgataaag catataatct gttaactgag gctcataaag	180	
	ccttgtttga aaataagggt cgtaattctg atttccaagc cttagacaaa ttattagaac	240	
	gcttgaatga tgaatcgact aataaagaaa aattggtaga tgatttattg gcattcctag	300	
55	caccaattac ccatccagag cgacttggca aaccaaattc tcaaattgag tatactgaag	360	

EP 1 770 171 A1

	acgaagtctg tattgctcaa ttagctgata agtataacaac gtcagatggg tacatTTTTg	420
5	atgaacatga tataatcagt gatgaaggag atgcatatgt aacgcctcat atgggccata	480
	gtcactggat tggaaaagat agcctttctg ataaggaaaa agttgcagct caagcctata	540
	ctaaagaaaa aggtatccta cctccatctc cagacgcaga tgttaaagca aatccaactg	600
10	gagatagtgc agcagctatt tacaatcgtg tgaaagggga aaaacgaatt ccactcgttc	660
	gacttccata tatggttgag catacagttg aggttaaaaa cggtaatttg attattcctc	720
	ataaggatca ttaccataat attaaatttg cttggtttga tgatcacaca taaaagctc	780
15	caaa	784
	<210> 559	
	<211> 502	
	<212> DNA	
20	<213> Streptococcus pneumoniae	
	<400> 559	
	gaccattacc actttattcc ttacagcaag ctttctgcct tagaagaaaa gattgccaga	60
25	atggtgcta tcagtggaaac tggttctaca gtttctacaa atgcaaaacc taatgaagta	120
	gtgtctagtc taggcagtct ttcaagcaat ctttcttctt taacgacaag taaggagctc	180
	tcttcagcat ctgatgggta tttttttaat ccaaagata tcggtgaaga aacggctaca	240
30	gcttatattg taagacatgg tgatcatttc cattacattc caaaatcaaa tcaaattggg	300
	caaccgactc ttcaaaca tagtctagca acaccttctc catctcttcc aatcaatcca	360
	ggaacttcac atgagaaaca tgaagaagat ggatacggat ttgatgctaa tcgtattatc	420
35	gctgaagatg aatcagggtt tgatcatgag caccgagacc acaatcatta tttcttcaag	480
	aaggacttga cagaagagca aa	502
	<210> 560	
40	<211> 462	
	<212> DNA	
	<213> Streptococcus pneumoniae	
	<400> 560	
45	tttcatttct tatttctctc aaaatactct cgggaaacata gcaggcaata tctgaccaa	60
	acttcaaaaag ctctctaacg cctgatgaac tgatatagag atgttcaggc cgactatgta	120
	aataaatagt ctctatatca gaagacagct gatgattgta gtaatcaaaa ctggcttcat	180
50	attgcaaata cgacgcattc ctcaaaccac gcactagaca agtagcacc aatctttttg	240
	caacatcgac caccaattca tcatgagaag ccaagacttc aacattttcc agatgtccca	300
	aagccttttc tagcccccgt ttacgatttt cgataggaag aaatccttgt ttgtggggat	360
55	taaaaaaat accacataa agcttatcaa aaagtctgct cgcccgttca atgatatcca	420

EP 1 770 171 A1

gatgcccatt tgtcatcgga tcaaattgagc ctgtgaataa gc 462

5 <210> 561
<211> 508
<212> DNA
<213> Streptococcus pneumoniae

10 <400> 561
gattttctgta tgaggcagtt cgcgattgac tgcaaattta tcattgtttt cacagagtga 60
accaaccaca tctacogctt cagctgggtcc atctggatgg gtcacgttgc taatatgatg 120
gtaagctccg tacatagctg gacgcatgag gttgactgct gaggcattcca cacctagata 180
15 ggtacggttag gtttccttct tatgagtgac tcttgtgact agagcaccgt gaggtgccag 240
cataaaacga cccaattcgg tgaaaatctt gacctgacca agacctgctg acgtaagaac 300
ttcttcatac accttacgaa ctccctcacc aatcaaggcg atatcgttcg gctcctggtc 360
20 tggacgataa ttaacaccaa taccgccaga aagattgata aagtctagcc aaatgccccaa 420
cttttccttg atttcaacag ccagttcaaa gagctgacga gccaaactctg gataatagag 480
atgggtcacg gtattggacg ctaggaag 508

25 <210> 562
<211> 652
<212> DNA
<213> Streptococcus pneumoniae

30 <400> 562
ggctgttagt ccaagtcaag aactatttgg aaagatcaaa gttaaaggaag ttcgttattt 60
gaaggaattt agaaatttaa attctaagga tgcaagggaa tatgacttgg ctttattaat 120
35 tctagaaaag ccatttggtg caaaattagg gactttgggt ctctacta gtcaaaaaaa 180
tttgacagga ataactgtga ctatcacagg ctatccatca tataatttta aaattcatca 240
aatgtatata gataaaaaac aagttttaag tgatgatggc atgttcttgg attaccaagt 300
40 tgatacttta gaggggtcta gtggatctac agtttatagt gctagtcacc gtgtagtagg 360
agtgcatact ttaggagatg gagctaata aattaacagt gcagttaa taaatgaagc 420
aaattgocat ttacttattt attcgggtct taaaggttac tctctgaag gatggaagaa 480
45 aataaatggg agttgggtact attatagaca acatgataaa caaacgggtt ggcaggagat 540
aaatgatact tgggtattatt tagacagttc cggttaagatg cttacagatt ggcaaaaagt 600
aaatggaaac tgggtattatc tcaattcaaa tggagcaatg gttacaggta gc 652

50 <210> 563
<211> 250
<212> DNA
<213> Streptococcus pneumoniae

55 <400> 563

EP 1 770 171 A1

	cttgtgctgt tcttcgttga tttccttgat atccaaaaga accaagtcag tgacagccat	60
	gagtttgtca aacttctcaa ggtaacgcgg tttattacgg aaaggaagag cacaggtgtc	120
5	caagggtacag tggattcctt gttccttagc cttggtgaag agagcaatca ggaaatcaat	180
	ctgcaagaga gcttctcttc cactgactgt aatcccaccc ttatttcccc agaaaccacg	240
	gtagcgcaag	250
10	<210> 564 <211> 500 <212> DNA <213> Streptococcus pneumoniae	
15	<400> 564 ttgatatcca acaactacaa aaagacgaag taaacaatat tacatatttt gctgaaaatg	
	ctgctggcga agactgggat ttatcagata atgtcggttg ggggccagac tttgccgac	120
20	catcaacctc ccttgatatc atcaaacat ctgtaggaga aagtactaaa acatatttag	180
	ggtttgactc aggggaagat aatgtagctg ctaaaaaagt aggtctatat gactacgaaa	240
	aattggttac tgaggctggt gatgaggcta cagatgttgc taaacgctat gataaatagc	300
25	ctgcagoccc agcttggttg acagatagtg ctttgattat tccaactaca tctcgtacag	360
	ggcgtccaat cttgtctaag atggtaccat ttacaatacc atttgcattg tcaggaaata	420
	aaggtaacaag tgaaccaatc ttatataaat acttggaaact tcaagacaag gcagtcactg	480
30	tagatgaata ccaaaaagct	500
35	<210> 565 <211> 525 <212> DNA <213> Streptococcus pneumoniae	
	<400> 565 aggaaacaga aaataaagag aaacataaag atattcataa tgctatagaa acttcaaagg	
40	atactgaaga aaagaaaaca acaattattg aggaaaaaga agttgttagt aaaaatcctg	120
	taatagacac taaaactagc aatgaagaag caaaaatcaa agaagaaaat tccaatcaat	180
	cccaaggaga tcatacggac tcatttgtga ataaaaacac agaaaatccc aaaaaagaag	240
45	ataaagttgt ctatattgct gaatttaaag ataaagaatc tggagaaaaa gcaatcaagg	300
	gactatcaaa tcttaagaat acaaaagttt tatatactta tgatagaatt tttaacggta	360
	gtgccataga aacaactccg gataacttgg acaaaattaa acaaatagaa ggtatttcat	420
50	cgattgaaag ggcacaaaaa gtccaacca tgatgaatca tgccagaaag gaaattggag	480
	ttgaggaagc tattgattac ctaaagtcta tcaatgctcc gtttg	525
55	<210> 566 <211> 250	

EP 1 770 171 A1

<212> DNA
<213> Streptococcus pneumoniae

<400> 566
5 cattgaaacc aggagaaaaag gtagcagaag ctaagaagaa ggttgaagaa gctaagaaaa 60
aagccgagga tcaaaaagaa gaagatcgtc gtaactaccc aaccaatact tacaaaacgc 120
ttgaacttga aattgctgag ttcgatgtga aagttaaaga agcggagctt gaactagtaa 180
10 aagaggaagc taaagaatct cgaaacgagg gcacaattaa gcaagcaaaa gagaaagttg 240
agagtaaaaa 250

<210> 567
<211> 280
<212> DNA
<213> Streptococcus pneumoniae

<400> 567
20 aaaaagcgaag gttaagagtg aacaagctga ggctacaagg ttaaaaaaaaa tcaagacaga 60
tcgtgaacaa gctgaggcta caagggttaga aaacatcaag acagatcggtg aaaaagcaga 120
agaagctaaa cgaaaagcag aagcagaaga agttaagat aaactaaaga ggcggaacaaa 180
25 acgagcagtt cctggagagc cagcaacacc tgataaaaaa gaaaatgatg cgaagtcttc 240
agattctagc gtaggtgaag aaactcttcc aagcccatcc 280

<210> 568
<211> 414
<212> DNA
<213> Streptococcus pneumoniae

<400> 568
35 aagatattgc caacctcaac atcgatggct tggttcttga catcaatatt agttaccttc 60
aagagtgaact tgtagtcaaa ctgcttttca cgttcttctt gggcattgtc cgcaaagacc 120
gctacacctg ccagttctga gtcgaactcg cgcaagagac taatcatacc gttgaccgtt 180
40 ccgccacctt tcaagaagtc atccacaatc aagacacggc tgcttgctt aagactacgt 240
tttgaaagga acattttctc gatacgggtc caacttgaac ctgaaacata gttgacgcta 300
acagttgaac cttcggtaat tttcaggtca cggcgacaaa tgacaaaaga gacattgag 360
45 acattggcaa ctgcatttgc aagtggcaca cccttagttg ctacggtcac aacc 414

<210> 569
<211> 312
<212> DNA
<213> Streptococcus pneumoniae

<400> 569
50 gcttgatga cgatagagga gttagaagag gtcaaaaact cagcggcagg aacctttgtt 60
actaagacag cgaccttga cttccgtcag gggaatcctg agccacgcta ccaagatgtt 120

EP 1 770 171 A1

	ccacttggtt ccatcaactc tatgggcttg ccaaataatg gcttagacta ttatttggat	180
	tatcttttgg atttgcagga aaaagagtcg aaccgaactt tcttcttata tctggtcggc	240
5	atgtctccag aggaaccca tactattttg aaaaaagtcc aagagagtga ttttcgtggt	300
	ctgactgagc ta	312
10	<210> 570 <211> 599 <212> DNA <213> Streptococcus pneumoniae	
15	<400> 570 ttgtagggct aggaacaggt tctactgcct attattttgt cgaagaaatc ggtcgtcgaa	60
	tcaaggaaga aggcttgacg attacagctg tgacgacttc tagtgtgacc agtaaacagg	120
	ctgaagggct caatatcccg ctcaagtcta ttgaccaagt agactttgtc gatgtgacag	180
20	tcgacggggc ggatgaagtg gatagtcagt ttaatggaat caaagggcgt ggtgggtccc	240
	ttctcatgga aaaggtggtc gcaacaccat caaaagaata catttgggtg gtggatgaaa	300
	gcaagctggt cgaaaaacta ggtgctttta aattgccagt agaagtgggt cagtatgggtg	360
25	cagagcaggt ctttcgtcat tttgaacgag ctggctacaa accaagtttc cgtgaaaaag	420
	acggccaacg ttttgtgacc gatatgcaga attttatcat tgacctcgcc ttggatgtca	480
	ttgaaaatcc aattgctttt ggacaagaat tggaccatgt cgttgggtgt gtggagcatg	540
30	gtttattcaa ccaaagtgtg gataaggtaa tcgttgcttg acgagatgga gttcagatt	599
35	<210> 571 <211> 450 <212> DNA <213> Streptococcus pneumoniae	
40	<400> 571 atgacgcgct atgctttgct ggtgagaggt atcaatgttg gtggtaagaa taaggctcgtc	60
	atggcggagc ttcgtcaaga attgacaaac ttgggactgg aaaaggttga gagctacatc	120
	aatagtggca atattttctt tacttcgata gattccaaag cccaattggt tgaaaagcta	180
	gagactttct ttgcagtcca ttatccatct attcagagct tttctttact gagtctagag	240
45	gactttgagg cggaacttga aaatctacca gcttgggtgga gcagagactt ggcacgaaaa	300
	gattttctct tttacactga gggtttggat gtggaccaag tcatcgcgac agttgaaagt	360
	ttagagctga aagatgaagt gctttatctt ggaaaacttg ggattttctg ggggaaattt	420
50	tctgaagaat cctattctaa gactgcctat	450
55	<210> 572 <211> 527 <212> DNA <213> Streptococcus pneumoniae	

EP 1 770 171 A1

<400> 572
aaccatgtat tgaggaaagt gacaactttc agtgctccta aagtgattac ttccagaact 60

5 gtttggaatg ctaagaatgg tttctgggat gttggtttgg aaagtcgtaa attagctgtt 120

agtggaaaaa ttaagcatta tgtggttgat aatgacaatg ttgtgactcc cttgattcat 180

aataatcgtg atattgttac atttacaggt aattcacgct ttaaaccaccg ttctcgtggc 240

10 tattttgaaa gtccaatgaa tgatattcct aactttaata ttggtaaaca agctaccttg 300

gataaacatg gttatcgtga tccgaaattg gataaagtgc gattctttta gaaacaggct 360

ctgcctcgat cttctagtca accaagcgct gaaccaatgg aaaatattgc ctcaggaaaa 420

15 cagggttactc aaagttcgac agctttcgga ggagatgcta gaagagctgt ggatggcaaa 480

gtcgatggta actatggta caattctgtc actcatacaa acttcca 527

20 <210> 573
<211> 561
<212> DNA
<213> Streptococcus pneumoniae

25 <400> 573
ggacttctctt ttcttatcca gaaattgatc tagctctctc tgatttcgaa gaatagtgc 60

tttatgtgaa tattcttggc aaagtttttg gtaattttct ttttgagttt tgctacgccc 120

atcccaaaga atccatctga taaactccca ctcaaagcgt tcagggcaat ctaccgccat 180

30 actttctctg acttttccac ggtatttaag ataacgctta aaggctctaa agagacaggt 240

caatggcgaa aaattgagaa agatgatttg gtcagcttct tgcattcgtt cttggtagta 300

gcaccaagaa taattacat cgatgacca agctttatgc ttggtgagaa agttttttat 360

35 ctcggttaac atccattcgc agtcactgtc ttgccacca gggtgaaatt ggagtgtgtc 420

catgtgcagt tttggaatgg agtagtagtt agataacttt totgctatag ttgacttacc 480

agaaccagaa tatccgataa ttgcgatttt cattttctac cttttcctat ttggagacaa 540

40 aaaaacagcc tctatggact g 561

45 <210> 574
<211> 503
<212> DNA
<213> Streptococcus pneumoniae

50 <400> 574
tttgcagatt tgtgagattg ataactgatcc agacctgatg ggcaaaggac tccacttccc 60

caatcggcat ctgagtaaaa cgataatagt agctatcagg gtcgttttgg gctagactca 120

gcattttcaa gaaacgggcc agataccaac tttcaatatc atccactcca gcactacat 180

agatggaaaa gtcaaagaag tcagtgatat agagacgac gttttgtgga ttttgaaaga 240

55 cattgattcc ctcaacaatt acaaaatcag cagctttgac actttgtttc tcttcgggta 300

EP 1 770 171 A1

	cgatgtcgta aacttcatga gaatagacag gaatatctac atcttgtcca tttttgatgc	360
5	ggtccaagaa gttgagaaga gttccatat catagctttc aggaaatcct ttacgattta	420
	aaatccoctg ctcaatcaag gtttgattgg gatagagaaa accatcagtt gtaaccaact	480
	caaccgtagc atctgtaaac gta	503
10	<210> 575 <211> 501 <212> DNA <213> Streptococcus pneumoniae	
15	<400> 575 aatagcagta gcagggacag gttatgtggg tttatctatt gcaattctat tagcgcaata	60
	tcataagggt atagcggtag atgttattcc tgaaaaagta gagcttatca atcgtcgcca	120
20	atctccatt aaggatgatg atattgaaac ttatttagtg gaaaaggaat tagacttagt	180
	tgcaacatta gatggtaatg aagcttatcg agatgctgac tttgtcataa ttgctgtccc	240
	aactaactat gacagtaaaa aaaattatct tgatacatct gttgtggaag cagttattga	300
25	gcagattatt gcggttaatt tgaaggcaac aattgtcata aaatccacaa ttctgtggg	360
	atatacagaa agtctccgaa cacgttttgg gcaatttaag attctcttta gtctgaatt	420
	tttacgggag tctaaagcac tttatgataa tctctatcct agtcgaatca tcgttgagc	480
30	agatttgaga gatacggagc a	501
35	<210> 576 <211> 200 <212> DNA <213> Streptococcus pneumoniae	
	<400> 576 atgaatttaa catttttagg cttatgtatt gcctgtatgg gcgtatctgt cgggtgaaggt	60
40	ttattgatga atggactgtt taaatcagta gcacgccaac cagatatgct ttctgagttt	120
	cgtagtttga tgttttttagg tgttaccttt attgaaggaa ctttctttgt aactcttgtc	180
	ttctcattta ttatcaaata	200
45	<210> 577 <211> 300 <212> DNA <213> Streptococcus pneumoniae	
50	<400> 577 atgagtgaat taggctttta atacagtatt ttagcgtcgg gttccagtgg aaattctttt	60
	tatctggaaa cctcaaaaaa gaagctttta gtagatgcag gcttgtctgg caagaaaatt	120
55	accagtctgc tagctgaaat taaccgtaag ccagaagacc tggatgccat cttgattacc	180
	catgagcatt cagatcatat ccatggagta ggcgttttgg ctcgcaagta tgggtatggat	240

EP 1 770 171 A1

	ctttatgcc	atgaaaagac	ctggcaagct	atggaaaata	gtaaatatct	tggaaggtg	300
5	<210>	578					
	<211>	550					
	<212>	DNA					
	<213>	Streptococcus pneumoniae					
10	<400>	578					
	ttgcacttta	tatcctccat	tatcttctct	tttatatcag	tgattatgga	caggatttct	60
	ttaaaagggg	atatttgatt	gaacttgctc	agacattgaa	atatatccta	ttctttgcac	120
	tagcgattag	tattttcta	tttttcttag	aggatcgatt	tagtatttcc	agacgaggca	180
15	tgatttactt	cctcacatta	catgctctct	tagtctatgt	gctaaaccta	tttatcaagt	240
	ggtattggaa	gcgggcttat	cccaacttta	aaggaagtaa	gaagattctc	ctacttacag	300
	caacttctcg	tgtcgaaaag	gtactggata	gattaataga	atcaaatgag	gttggtgggg	360
20	agttggtagc	cgtcagtgtc	ttagataaac	cagattttca	gcatgattgt	ttaaaggtag	420
	tagcagaggg	ggagatagta	aactttgcga	ctcatgaggt	ggtcgatgaa	gtctttatca	480
	atcttccaag	taaaaaatac	aatattggag	agcttgtctc	tcagtttgaa	acgatgggaa	540
25	ttgatgtaac						550
30	<210>	579					
	<211>	345					
	<212>	DNA					
	<213>	Streptococcus pneumoniae					
35	<400>	579					
	aagttagggc	tttcttgcca	aaaacatctt	tgatgaact	accacaattg	tttaatatct	60
	ttgttggtta	tatgagtatt	gtaggtccta	gaccagcggg	tataaatgaa	ctagatttga	120
	ttgcagagag	agataagtat	ggagcaaatg	atatcttgcc	agggttaact	ggatgggcac	180
40	aaattaacgg	gcgtgatact	ttgtctgttg	agatgaagac	ggagttagat	ggctactatg	240
	ttaaacatct	gtctttgata	atggatatta	gatgtatagt	taagacaata	ccttacgtac	300
	tgaaacgaaa	aggtattgta	gagggtagt	gtaagaaaga	aagtt		345
45	<210>	580					
	<211>	600					
	<212>	DNA					
	<213>	Streptococcus pneumoniae					
50	<400>	580					
	taacgagatt	attacaaaac	aaaactacta	tcgtatttct	ttttctggta	aaggaaaatt	60
	aagtaagata	ttaggttatg	taaaattcag	aaaagaaatt	aaaaagaagc	taaaagaaaa	120
	tgattatgat	atgatattgc	cgttacatag	tattgtgtct	ttcattttag	tagattttct	180
55	tctcttttca	tttaaaaaata	gatataattt	tgatattcgt	gattacagtt	atgaaaaatt	240

EP 1 770 171 A1

	tttggtttat cgtttggttc agaaacaatt ggtgaaaaat tctttaatga atatcgtttc	300
5	ttcagacggc tataaatttt ttttaccaat gggagagtat tttactacc ataacctacc	360
	caatatgata gaattaaacg aggtaaagca gttaaaaaat aatagtagt ttccaattca	420
	actttcctac attggtttta ttcgttttca agaacaaaat aaaaaataa tcgatttttt	480
10	tgcaaatgac agtcgatttc agttgaattt tataggtagt aatgcaggag aattaaggga	540
	attttgtcaa gaaaaaata tcagcaatgt taacttgggtg gacacattcc agcctaaga	600
15	<210> 581 <211> 561 <212> DNA <213> Streptococcus pneumoniae	
20	<400> 581 gaaagaattg ggtgcaaagg tttatcatgt gcctctatta aggaaaaagc ctctacatca	60
	gtttctctct cttgctagaa taataaagaa aggagattat gatatagttc attgccatgg	120
	ctataaatct gcaattggtc tgatcttctc taaaataatt ggttgtaaaa ttagaattat	180
25	tcatagtcac atggccttatg taacagaaaa cagttttcaa aaagtattgc gtaaattagt	240
	aacaattttg gtaaaaaatct tagcaactca ttggtttgca tgtggggaag attcggctaa	300
	gtggttatat ggagagaaaag cgtataaaga cggaaaaatt gaaattattt ttaatgcaat	360
30	tgatttgaaa aagtatcaat ttttgtcaga tgttagagaa aaatgtcgta gagaattaga	420
	tgtgtcaaata aagttcgtat taggaaatat agctcgcta tcagatcaaa aaaaccaaag	480
	ttattttatt aacgttttta aagaactcat tttaatcaaa ccaaattgta ttttactcct	540
35	agttggtaat ggtgaggatg a	561
40	<210> 582 <211> 736 <212> DNA <213> Streptococcus pneumoniae	
45	<400> 582 gcttccatca aatcacttta cactactaat tcagatttgg atttaaattt atggattatt	60
	gctgataaag tttcggatag aaataaagaa aagataaata gattatcaaa acaatttgcg	120
	cagagagaaa ttaattggat agagaacgtt gagatcccat ttaaattaca tttagatagg	180
	ggatcaatta gttcatttag cagattattt ctgggaagtg ttcttccatc ttcaatgagt	240
50	aaagttcttt atcttgacag tgatattatt gttatggatt ctttacgaag tatttttgat	300
	attgatttta agggtaaaat tctctatggg gtgaatgata cttttaataa agaatacaag	360
	cagggtgttg gtataccaat tgacaagcca atgtttaatg ctggagttat gcttattaat	420
55	ttagagttat ggagaaataa taacgtcgaa gaaagatttt tgcaagtaat tcaaaagttt	480

EP 1 770 171 A1

	aatgggtacta tattacaagg agatttaggg gttttaaatg cagttttata taactcattt	540
	gggtgtacttc ctccagaata taattatatg accatatttg aagatttgac ttatgaagaa	600
5	atgatagttt ttaaaaaacc aattaattat tattcaaaag aggaaattaa aaatgccaga	660
	gaacgtatag tcttacgaca ttccacaact agttttttat caaaaagacc ttggcaagaa	720
	ggcagtaatg ttgcac	736
10		
	<210> 583	
	<211> 525	
	<212> DNA	
	<213> Streptococcus pneumoniae	
15		
	<400> 583	
	tggaagacct ttatcctgtc ttttaacagt tcctttcgtg aaaacaaata ttactcccaa	60
	tcaaatatct tatttatcta taattccttt gattggtgga tttataataa tgatatttac	120
20	aactgatttc gttgtattat tactggcatg gtttctatth tttttatgga acttactaga	180
	tgagtagat gggaaacttag ccagatatcg ggagcaatac tcgaaggatg gaagtgtagt	240
	agatgcaatg gctggctatg tagccatggg gttgacgtat ttcgggtgcag gaatagtagc	300
25	tgctcattta aacgactcag atatctatat aattttgggt gcattatctg ggatttcatt	360
	gatttttcca aggttagtga tgcataagta tatcaataca gtagctcaag atgagctctgt	420
	gagtagcatt aaagataaat ctgattttta tactataaaa atactggctc taaacatgac	480
30	atcaattaca ggaattccgc aggttttact gctattaact atttt	525
	<210> 584	
	<211> 596	
35	<212> DNA	
	<213> Streptococcus pneumoniae	
	<400> 584	
	ctataatggg gagcgatatt tgccacaaca gattgatagt attaggtctc aaacattcac	60
40	taattggacg ctttttatta gggatgatgg atcaaaagat aaaacaatag aagtaataca	120
	gaggtattct aagatagatg atagaattag attcgttgaa aatccctcaa agtttcatgg	180
	agcttattac aattttttta atctaattga atacgttaaa aacaattatc aatttgatta	240
45	ttactttttt tgtgatcaag atgatatttg gaaagagcac aagttagaaa tacagctgtt	300
	aagattttct aaagatgaca tgccagagat ggtttactct gatatgtcaa cgattgatgc	360
	cagtaataat ttgatagata ttagtataaa taaaataatg gggattgaat taccgaacat	420
50	aaataatttg tattttattc atgcctatat ctgggggtgt actgcagggt ttaatcatgc	480
	attgctagag atggttcctt cagttgatat tgataaagat tatttatata tagaaaaact	540
	gtctcatgat aattattttg caaagtttgc actagagtat gggaagggtg tgttct	596
55		

EP 1 770 171 A1

<210> 585
 <211> 530
 <212> DNA
 <213> Streptococcus pneumoniae

5

<400> 585
 cgtatcaagt cggcattttc aaactttggg tatgcaaaat aatttttggc tggcagagaa 60
 tgttgaattt ctggaatttg gattacctcg aaatgatgat ttttttaaaa gtgaaaaaat 120
 10 caaaaccaca aatataaaat ttagaacatt atttgatata gatttagacg aactggtagt 180
 tttgtatatg ccgacgttca gagatgatgg atcggtgaat gcctataatt tagattactc 240
 gaaactaata catgtttttc aaaataaatt tagaaaaaat gtaaaaatat tagttcgttt 300
 15 tcatccaaat gttgattcta gttttataaa tttacaggat acagactgta taaatgtgtc 360
 gacctattca aatcctcagg atctgatgat gagtgcagat gtgatgatta cggattattc 420
 atcggttctt attgatttta tgttattaaa tcgtccagta tttctgtatt taccagatta 480
 20 tcaaagttaa gtgaatgata gaccattgga tgataacttt gataaattgc 530

<210> 586
 <211> 380
 <212> DNA
 <213> Streptococcus pneumoniae

25

<400> 586
 ggatatgcca gcaaaaacgt tagccagcaa agttcaagtg gctgtaccag ctgacactcg 60
 30 tatcgtctca atctctgtca aggataaaca gccagaggaa gccagtcgta tcgctaattc 120
 tctacgagaa gttgctgcag aaaagatcgt cgctgtaacg cgagtatctg atgtaacgac 180
 actgaagaa gcgcgaccag ctacgactcc ctcttctcca aatgttcgac gcaattcctt 240
 35 gtttggtttt cttggaggag cagtcgtaac agtaattgct gttcttttga ttgagttgct 300
 cgacaccogt gtgaaacgta ctgaagatat tgaagatgta ctgaaaattc cacttttagg 360
 gctcgttcca gattttgaca 380
 40

<210> 587
 <211> 290
 <212> DNA
 <213> Streptococcus pneumoniae

45

<400> 587
 atcaacgact tccaccaata tcgcttgggc ttttgccgct gcagggttaca aaacgttgct 60
 gattgatgga gatattcgca attctgttat gttaggtgtc tttaaagcaa gggataagat 120
 50 tacaggcctg acagaatttt tatcaggaac tacagacctc tcacaagggc tttgtgatac 180
 caatatcgaa aatctctttg taattcaggc tggctctgtg tcaccgaatc cgacagctct 240
 tcttcaaagt aagaatttca gtacaatgct tgaaaccttg cgtaaattat 290
 55

EP 1 770 171 A1

<210> 588
 <211> 507
 <212> DNA
 <213> Streptococcus pneumoniae

5
 <400> 588
 agattacact ttacagcta tctccctcag ctacttaacc agtattattg ttgccttttag 60
 gcagggagga cttagtcaat ttatcttgat actaacagat gatagtttca atgggttcggt 120
 10 actagaaatg catgaagtgt cacctattac agctctcttt attctgtact atttgtacaa 180
 atattttata aaagaaaata gtttttcttc agtattttat aatatcttaa tagctctcat 240
 tattcttttt ttaagcctta aacgaatcgt tcttttgagt gtattaatta tcataaccagt 300
 15 atttttggta atttattggt atgataaaaa agtaagtaaa ctagggaag aacgaaaaat 360
 ttttaagtta ttaaatactt tttccttaat atttataaca ggaatattcc tttatgttta 420
 tagtgtaaaa tctgatttta tatatacatt tattcaagaa cataatatta attcgatggc 480
 20 tagaacagat ttatggaagg gagttga 507

<210> 589
 <211> 558
 <212> DNA
 <213> Streptococcus pneumoniae

25
 <400> 589
 tctggactct cgataattgg aataatggtt ttcttatatc taattatggt ccgtctatat 60
 30 ttatatgggt ttgctttcta attatttttc aaattactgg ttttatttta caaaaagtta 120
 gtatatatga tttttctgta tggatatctga ttttatctta tttttttatg tttggattaa 180
 ttttcaatga gtatatgggg tttcaaacia ctctgctgtg gagccctagt aacttctata 240
 35 ataatagaaga attatttcat tcatatattt ttataatttg gattttgttt tgttattctg 300
 taggctatatt atttttttat agtgatggaa aggtacatta tcattcagaa gtacaaaatt 360
 atcaggaaaa tgaagagaaa attttgtaca atgcgggtag gattttaaca ggagtgggct 420
 40 ttatttctag ggtaataact gattctaaaa cagtactagc agttagagcg gcgaatagct 480
 attcagcata ttcagaggca gctagttcag gaataataga tgatttagga gtacttatgc 540
 45 ttcctgggtg gttctcct 558

<210> 590
 <211> 516
 <212> DNA
 <213> Streptococcus pneumoniae

50
 <400> 590
 acatttgta tagtttcctt gttgacaaaa ttgtcgtaca ggcctaaagt ggaggggaatt 60
 tcgcatgaag aattgaaaga aataaatcct tcaaagataa tctatgtcat tcttctgact 120
 55 ctaaatcttg ttatgttatt tctttatata cgtgaaattc agaaagtagt attgttttca 180

EP 1 770 171 A1

	ggtagaagtt tttctaatat tacagatttg ataagtaact ataggtagct atcttattat	240
5	tcaaatgaag tagaaaatcg tgtaagtgga atgattaatc aactatctaa aattattcca	300
	gcgactacac ttattttcttt atatatatatt atgaataatt attttataac taaacaaata	360
	aagaaaaatt tcattttattt gattccaata gctatattct ttgtctatgc aatcattagt	420
10	ggtgtagat tgcccttat aaggtagtt gttggagctc tgttgatatt gtatatatac	480
	tctgtgtacg ggagtctaa atctcaactt accaaa	516
15	<210> 591 <211> 383 <212> DNA <213> Streptococcus pneumoniae	
20	<400> 591 ttttaacca ccaagttgac tttagcttga tgcgagagat tggttaaggtt tttgcggaaa	60
	aatttgctgc tactggcatt accaaggctc taaccattga agcgtcgggt attgccccag	120
	ccgtttttac agctgaagcc ttaaactgtc ccatgatttt cgccaaaaaa gctaagaaca	180
25	tcaccatgaa cgaagacatc ttaactgtc aagtctactc ctttaccaag cagggtgacca	240
	gcaccgtttc tatcgctgga aaattcctct caccagagga caagggtttg attatcgacg	300
	atttccttgc taatggccaa gctgctaaag gcttgattca aatcatcgaa caggccggtg	360
30	ccacagtcca agctatcggt atc	383
35	<210> 592 <211> 723 <212> DNA <213> Streptococcus pneumoniae	
40	<400> 592 gtggatgctc aagaaactgc gggagttcac tataaatatg tggcagattc agagctatca	60
	tcagaagaaa agaagcagct tgtctatgat attccgacat acgtggagaa tgatgatgaa	120
	acttattatc ttgtttataa gttaaattct caaaatcaac tggcggaatt accaaatact	180
	ggaagcaaga atgagaggca agccctagtt gctggtgcta gcttagctgc tctgggaatt	240
45	ttaatttttg ctgtttccaa gaaaaagggt aagaataaaa cggattatca tttagtattg	300
	gttgcgggaa taggaaatgg tgtcttagtt tcagtcctatg ctttagaaaa tcatcttttg	360
	ctaaattaca atacggacta tgaattgacc tctggagaaa aattacctct toctaaagag	420
50	atttcagggt acacttatat tggatatatc aaagaggga aaacgacttc tgattttgaa	480
	gtaagtaatc aagaaaaatc agcagccact cctacaaaac aacaaaagggt ggattataat	540
	gttacaccaa attttgtaga ccatccatca acagtacaag ctattcagga acaaacacct	600
55	gtttcttcaa ctaagccgac agaagttcaa gtagttgaaa aacctttctc tactgaatta	660

EP 1 770 171 A1

	atcaatccaa gaaaagaaga gaaacaatct tcagattctc aagaacaatt agccgaacat	720
	aag	723
5	<210> 593 <211> 465 <212> DNA <213> Streptococcus pneumoniae	
10	<400> 593 attatcactg gcggaagac ccataattag gttttttctc gcacattgtt gggaacggtt	60
	gcacatgca ggtaggacct gttgataatg gtgctggga cgttgggggc ggttggaatg	120
15	ctgagaccaa tgcagcggtt gaactgattg aaagccattc aactaaagaa gagttcatga	180
	cggactaccg cttttatata gaactcttac gcaatctagc agatgaagca ggtttgccga	240
	aaacgcttga tacagggagt ttagctggaa ttaaaacgca cgagtattgc acgaataacc	300
20	aaccaaacia cactcagac catgtggatc cataccctta cttggcaaaa tggggcatta	360
	gccgtgagca gtttaagcat gatattgaga acggcttgac gattgaaaca ggctggcaga	420
	agaatgacac tggctactgg tacgtacatt cagaaggctc ttatc	465
25	<210> 594 <211> 452 <212> DNA <213> Streptococcus pneumoniae	
30	<400> 594 aatggaatga acggaagtga agctgctgtt catgaagtgc cagaatacac aggccatta	60
	gggacatccg gcgaagagcc agctccaaca gtcgagaagc cagaatacac aggccacta	120
35	gggacatccg gcgaagagcc agcccgaca gtcgagaagc cagaatacac aggccacta	180
	gggacagctg gtgaagaagc agctccaaca gtcgagaagc cagaatttac agggggagt	240
	aatggtacag agccagctgt tcatgaaatc gcagagtata agggatctga ttcgcttgta	300
40	actcttacta caaaagaaga ttatacttac aaagctctc ttgctcagca ggcacttcct	360
	gaaacaggaa acaaggagag tgacctcta gcttactag gactaacagc tttcttcctt	420
	ggtctgttta cgctagggaa aaagagagaa ca	452
45	<210> 595 <211> 526 <212> DNA <213> Streptococcus pneumoniae	
50	<400> 595 ggtcaactgt ccatactctc tttttttcaa ggagggtcat atcaactgaa caataagagt	60
	atagatatca gctctttgtt attagataaa ttgtctggag agagtcagac agtagtaatg	120
55	aaatttaaag cagataaacc aaactctctt caagctttgt ttggcctatc taatagtaaa	180

EP 1 770 171 A1

	gcaggcttta aaaataatta cttttcaatt ttcattgagag attctggtga gataggtgta	240
	gaaataagag acgccaaga gggaataaat tattttatttt ctagaccagc ttcattatgg	300
5	ggaaagcata aaggacaggc agttgaaaat aacttagtat ttgtatctga ttctaaagat	360
	aaaacataca caatgtatgt taatggaata gaagtgttct ctgaaacagt tgatacattt	420
	ttgccaattht caaatataaa tggatatagat aaggcaacac taggagctgt taatcgtgaa	480
10	ggtaaggaac attacctcgc aaaaggaagt attggtgaaa tcagtc	526
	<210> 596	
	<211> 506	
15	<212> DNA	
	<213> Streptococcus pneumoniae	
	<400> 596	
	agtcgcacta gccacatttt tcttcggttt gctagggacc agtacagtat ttgcagatga	60
20	ttctgaagga tggcagtttg tccaagaaaa tggtagaacc tactacaaaa agggggctct	120
	aaaagaaacc tactggagag tgatagatgg gaagtactat tattttgatc ctttatccgg	180
	agagatgggt gtcggctggc aatatatacc tgctccacac aaggggggta cgatcggctc	240
25	ctctccaaga atagagattg ctcttagacc agattgggtt tattttggtc aagatgggtg	300
	cttacaagaa tttgttggca agcaagtttt agaagcaaaa actgctacga ataccaacaa	360
	acatcatggg gaagaatatg atagccaagc agagaaacga gtctattatt ttgaagatca	420
30	gcgtagttat catactttta aaactgggtg gatttatgaa gaggggttatt ggtattattt	480
	acagaaggat ggtggctttg attctc	506
35	<210> 597	
	<211> 518	
	<212> DNA	
	<213> Streptococcus pneumoniae	
	<400> 597	
40	atttcgagtg ttgcttatgg gcgccaagtc tatctcaagt tggaaaccac gagtaagagt	60
	gatgaagtag aggtgctttt tgaagctttg ataaaaggag tcaaggtagc tcctcagaca	120
	gagtggaaac agatttttga caatacagaa gtgaaggcgg ttatttttagg gggcgaccca	180
45	agttcgggtg cccgagttgt aacaggcaag gtggatatgg tagaggactt gattcaagaa	240
	ggcagtcgct ttacagcaga tcatccaggc ttgccgattt cctatacaac ttctttttta	300
	cgtgacaatg tagttgcgac ctttcaaaac agtacagact atgttgagac taagggttaca	360
50	gcttacagaa acggagattt actgctggat catagtgggtg cctatgttgc ccaatattat	420
	attacttggg atgaattatc ctatgatcat caaggtaagg aagtccttgac tcctaaggct	480
55	tgggacagaa atgggcagga tttgacggct cactttac	518

EP 1 770 171 A1

<210> 598
 <211> 534
 <212> DNA
 <213> Streptococcus pneumoniae

5

<400> 598
 gggtaactat gcgacttctg cttcaagttc ttcattgggat ttagtagcaa ataatacatct 60
 gaaaatgacc gacactggaa atgtaacacg aactgcagca catgaagatg cgatagcggg 120
 10 cgcttctgct aaaaatcaaa cagttgagtt tgataaagtt aacataggtg gagaaagttt 180
 taaatacaga aatatagggg cctttttcga taagagtaaa atcacaacaa atgaagatgg 240
 aacaaaagct cctagtaaata taaaatttgt atatataggc aaggggcaag accaagattt 300
 15 gatagggttt gatcttaggg gcaaaattgc agtaattgat agaatttata caaaggattt 360
 aaaaaatgct tttaaaaaag ctatggataa ggggtgcacgc gccattatgg ttgtaaatac 420
 tgtaaatattac tacaatagag ataattggac agagcttcca gctatgggat atgaagcggg 480
 20 tgaagggtact aaaagtcaag tgttttcaat ttcaggagat gatgggtgtaa agct 534

<210> 599
 <211> 604
 <212> DNA
 <213> Streptococcus pneumoniae

25

<400> 599
 gatcaacaag ctgaagaaga ctatgctcgt agatcagaag aagaatataa tcgcttgact 60
 30 caacagcaac cgccaaaagc tgaaaaacca gctcctgcac caaaaacagg ctggaaacaa 120
 gaaaacggta tgtgggtactt ctacaatact gatgggtcaa tggcgacagg atgggtccaa 180
 aacaacgggt catgggtacta cctcaacagc aatgggtgcta tggctacagg ttgggtccaa 240
 35 tacaatgggt catgggtatta cctcaacgct aacggcgcta tggcaacagg ttgggtctaaa 300
 gtcaacgggt catgggtacta cctcaacgct aatgggtgcta tggctacagg ttgggtccaa 360
 40 tacaacgggt catgggtatta cctcaacgct aacggcgcta tggcaacagg ttgggtctaaa 420
 gtcaacgggt catgggtacta cctcaacgct aatgggtgcta tggctacagg ttgggtccaa 480
 tacaacgggt catgggtacta cctcaacgct aacgggtgcta tggctacagg ttgggtctaaa 540
 45 gtcaacgggt catgggtacta cctcaacgct aatgggtgcta tggcaacagg ttgggtgaaa 600
 gatg 604

<210> 600
 <211> 500
 <212> DNA
 <213> Streptococcus pneumoniae

50

<400> 600
 gtgtcagcac aaattacgat taaccataaa aaagcgcgct atgttcggat tgagctagaa 60
 55 ggctataatg cctcagctc tgcagaagtt gaagttttct gctttatagc tacgaatgct 120

EP 1 770 171 A1

	gaaacggcga cacaagtttc taagccagtt caaccaatca gtcagactcc tgtgaaggat	180
5	aaaacattga caattcaaca cagtggagct tacattgccc gctactccat aacttgggaa	240
	gaagttccag tagataaaga tggaaaccaa gttgttcgta gtcattcttg ggaaggaagc	300
	ggtcgcaacc agactgcagg ttttgtcttc aacctcccaa tcaaagaaaa tatgagaaat	360
10	ctgcgagtta agattgagaa aaagacgggc ctactatgga atagatggca aacaatctat	420
	gaaaacagac caatttttagc tcaaccccac cgtaaaatta cccattgggg tacgacattg	480
	aattccaagg tgagtgcga	500
15	<210> 601 <211> 419 <212> DNA <213> Streptococcus pneumoniae	
20	<400> 601	
	tgctcggaatt gagctagaag gctataatgc cctcagtcct gcagaagttg aagttttctg	60
	ctttatagct acgaatgctg aaacggcgac acaagtttct aagccagttc aaccaatcag	120
25	tcagactcct gtgaaggata aaacattgac aattcaacac agtggagctt acattgcccg	180
	ctactccata acttggaag aagttccagt agataaagat ggaaaccaag ttgttcgtag	240
	tcattcttgg gaaggaagcg gtcgcaacca gactgcaggt tttgtcctca acctcccaat	300
30	caaagaaaat atgagaaatc tgcgagttaa gattgagaaa aagacgggcc tactatggaa	360
	tagatggcaa acaatctatg aaaacagacc aatttttagct caaccccacc gtaaaatta	419
35	<210> 602 <211> 401 <212> DNA <213> Streptococcus pneumoniae	
40	<400> 602	
	atctgtagaa ggtcttggtt tcgcaattcc tgcaaatgat gctatcaata ttattgaaca	60
	gtagaaaaa aacggaaaag tgacgcgtcc agctttggga atccagatgg ttaatttatc	120
	taatgtgagt acaagcgaca tcagaagact caatattcca agtaatgtta catctggtgt	180
45	aattgttcgt tcggtacaaa gtaatatgcc tgccaatggt caccttgaaa aatacgatgt	240
	aattacaaaa gtagatgaca aagagattgc ttcattcaaca gacttacaaa gtgctcttta	300
	caaccattct atcgagagaca ccattaagat aacctactat cgtaacggga aagaagaac	360
50	tacctctatc aaacttaaca agagttcagg tgatttagaa t	401
55	<210> 603 <211> 690 <212> DNA <213> Streptococcus pneumoniae	

EP 1 770 171 A1

	<400> 603	
	atctgtgagg atcttggtga gagaggatcat gaagttactg ttttgacagg aattcctaataat	60
5	tatcctgaag gtaaaacata tgcggattat cggaataaca aaaatagacg agagactata	120
	gaaggagtta ctgttttttcg ttctataaca attccaaggg gaaaaagtac tttacatagg	180
	atattaaatt attttagttt tgctatcagt tctctgatag gggttctact gggacagtat	240
10	aaagcaaaag atggatcaga atttgattgt atttttgtaa atcaatcgtc tccagttatg	300
	atggcatggg ctgctatggc ttataaaaat aaatataaga aacctatgtt tctgtattgt	360
	atggatgttt ggccagatag tttaactgta ggtggagtga aacaagatgg cttgattttc	420
15	aagttgttta aatttatatc gaaaaaagtt tatcgagcta gtgattatat atttgttact	480
	agtccatcat ttaagaatta ttttgtgaac caatttgaca taacagaaca aaagattact	540
	tatttgccac aatatgcaga agatcttttt atccctgatg aatctagagt taataaagaa	600
20	agtgttgacc taacttttgc tggtaaatatt ggcaaagcac aaaatttgga aactattttg	660
	aaagctgcca gtttgataga gaagaatacc	690
25	<210> 604	
	<211> 588	
	<212> DNA	
	<213> Streptococcus pneumoniae	
30	<400> 604	
	caacttctga ttatgccttt gtggatcctg ttgggagtag tgtctatttt ttctagaatt	60
	gacatggaac gatcattcct atttttttta ttaacaatag gttgtttaat tagcactatt	120
	gctttgtag atatagttac gggagtatct tatgtcttta atgggttgct tcagcaactc	180
35	tatttggtcg tgggaattct agtttttaggc tactggaatg ctgatgtgat tgttcattat	240
	tggaaaatca tcaccatgac ttttttgga gcatgtttgc tgatttcagt ggatatttat	300
	tttactact ttcaaggaca tactttttca aatattgatt atgtttatcg agctaagaat	360
40	tcagcggcat ctatcttttt atcggcagtt attctcaact tgtctctata taatcgcaag	420
	tgggcaactgt ggagaaaagt attgttatta gctagtagcg gattgctgat ttacatgtgc	480
	atccttatgc ggtcacgagc agttctgtta gcagctgcag tacttccgct agtttatata	540
45	tggtttcagg agacgtcttt ggggcataag attggacgga cattagga	588
50	<210> 605	
	<211> 739	
	<212> DNA	
	<213> Streptococcus pneumoniae	
55	<400> 605	
	agtggaacta tgtgtttaat cttgccata aactattttc totaactatt ccacttattg	60
	ttactcccta tgtcactcga gtcttttctt cagatcattt tgggatttat acttatacca	120

EP 1 770 171 A1

atacagttgc ttcttacttt gttaccttta cattgatggg gataagtatg tatggaagta 180
 agaaaatttc tcttaaaaga catgatgaga tagcagtcaa tgatgaatat gcttccttac 240
 5 tgactgtcca gctgcttaat gtaggtctag ccacgttaac ttactttctc tatgtgacct 300
 tttttgtcaa taataatcaa gttatattatt ggatccagat gttgtatgtg atttctgctg 360
 ttttgatatg acttggtttt tatcaggatt ggaacgtttt cgtgaaattg ctgttcgaaa 420
 10 tatcattgta aatgtcttat cagccctcat gatttttttc tttgtgcata cggaggctga 480
 tttggctatc tataccttaa taaaggtagg gacgattttt atcagtcaga ttgttatttt 540
 tttaccagtt gttcggatgc aacggtttta tottgcagga gctgaacata ttcgacgtac 600
 15 ctatcgaggc ttgcttttgt tgtttatccc tgttttggca gacacccttt ttcaaactat 660
 ggataagatc atgctaggta tctatgcac ctatactgct gtgggtttgt attactcaag 720
 taggatgggt gctgacac 739
 20
 <210> 606
 <211> 533
 <212> DNA
 <213> Streptococcus agalactiae
 25
 <400> 606
 aaagaaacac tcacatacac ctctacgggt gattaattta tttcttttgg tgatttttat 60
 tttgttaagt gtagtctcat tatttcttat gtatcgtcac cattttttgg catttagaca 120
 30 cttgaacgtc atttatggag ttgtaattat tttaatcatt ttagcaagtt tatttctttg 180
 tattaagaat aaagctagaa tttttacaac tataatttta gtactatcct ctattttcgt 240
 tgctactact ttatatggat ttaagtcaac cattgatttg acaaataatc taaataaaac 300
 35 tgcttcatac tctgaaattg agatgagtgt agttgtacca aaagattcta aaataaccaa 360
 tatagaagct gtcagcaaat tagccgcacc agttaaaaac gatacttcaa atattactga 420
 tttgatagaa catataaaat cagaaaaagg aatctctatt acaccacaaa aaacagattc 480
 40 ttaccaggat gcatacaata gaattaaaaa tgggtgatagt caagctatgg ttt 533
 <210> 607
 <211> 510
 <212> DNA
 <213> Streptococcus agalactiae
 45
 <400> 607
 taaacacgaa gcggaaaaaa gatttgaaca tottcaaata ttatatggtg gagaattgta 60
 50 ctatacaagt gatatgtag aaaaactgaa gttaaagcaa attccaactt taaacaatac 120
 gaaatttgct ttaattgaat tttctatgca aacttcttgg aaagatattc atacagcttt 180
 gtcaaatgtt ttaatgcttg gtattacacc agtcgttgcg catatagaga ggtataacgc 240
 55 tttagagaat caaaaagaac ggggtgaagga aattattaat atggggtggt acacacaaat 300

EP 1 770 171 A1

aaatagttcc catattttga aacaaaaact ttttaatgat aagcataaac gctttaagaa 360
 aagagcccggt tattttttag aggaaaattht agtgcatttt gtagcgagtg atatgcataa 420
 5 ccttgatgth agaccgcat ttttagcaga agcttataag attatctgta gagatttcgg 480
 taaagaacgt gctaaccaac tttttattga 510
 10 <210> 608
 <211> 534
 <212> DNA
 <213> Streptococcus agalactiae
 15 <400> 608
 taatcacatt tgttgccatt gcatttgcaa cagctggact tttctatagt ctttttattg 60
 ttacgccaca atatacttct tcaacaagga tatatgtcat taaccctaata acccctaata 120
 atagtattac tgcacaagat ctacaagcgg ggagttttct tgcaaatgac tataaggaga 180
 20 ttattacgtc tactgacgtt ctagaaaaag ttatttcttc tgaaaaattg aattatcctt 240
 cgtctcagtt gctacaaaaa ataacagtht ctatttttaa agatacacgt gttatttcaa 300
 tatcgggtcga agatgctaata ccaaaaatgt ctcaaaaatt agcaaattca gttagagaag 360
 25 cagcagtttc aaaaatcaag gcagttactc aagtagaaga tatcactact cttgagaagg 420
 gaaatttacc taaagcacca tcttctccta atattaaaaa gaatgtacta atcgggttta 480
 30 ttgttggtgc aggattatcg actattgtht tagttattat ggggtattttg gatg 534
 <210> 609
 <211> 585
 <212> DNA
 35 <213> Streptococcus agalactiae
 <400> 609
 cgtacaaaca tacagtttag tggaaggaa aataaaattc ttgcaattac ctctgtagg 60
 gaaggggaag gaaaatccac tacttcaaca agtttagctt tatcttttagc tcaagcagga 120
 40 tttaaaacat tattaattga tgcggatact aggaactctg ttatgtctgg aacctttaaa 180
 gcaactggaa ctattaaagg cttgacgaat tatttatcag gtaatgcaga tcttgagat 240
 attatctgtg aaaccaatgt tcctagactg atggctgtht cttcaggga agtaccacca 300
 45 aatccaacag cattacttca gaacgcttat ttttaataaga tgattgaagc tattaataat 360
 atatttgatt atattatcat cgatactcca cctattggtt tagttgttga tgccgcaata 420
 atcgtagtgt cttgtgatgg ctttgthtta gtaaccaag caggtagaat aaaacgtaat 480
 50 tatgttgaaa aagcaaaaga acagatggaa caaagtggtht caaagthtctt aggtattatt 540
 ctaataaag ttaatgaatc tgttgctact tacggcgatt atgga 585
 55 <210> 610

EP 1 770 171 A1

<211> 527
 <212> DNA
 <213> Streptococcus agalactiae

5 <400> 610
 ttggagtcg tggctatctt gaagagttta aaatgggtatt gaaatacagc ttttactata 60
 ttttcatatc aagttcatta ttttttattt ttaaaaactc ttttacaacg acacgacttt 120
 10 ccttttttac ttttattgct atgaattcga ttttattata tctattgaat tcattttttaa 180
 aatattatcg aaaatattct tacgctaagt tttoacgaga taccaaagt gttttgataa 240
 cgaataagga ttctttatca aaaatgacct ttaggaacaa atacgaccat aattatatcg 300
 15 ctgtctgtat cttggactcc tctgaaaagg attgttatga tttgaaacat aactcgtaa 360
 ggataataaa caaagatgct cttacttcag agttaacctg cttactgtt gatcaagctt 420
 ttattaacat acccattgaa ttatttggtt aataccaaat acaagatatt attattgaca 480
 20 ttgaagcaat gggagtgtt gtcaatgtta atgtagaggc acttagc 527

<210> 611
 <211> 360
 <212> DNA
 25 <213> Streptococcus agalactiae

<400> 611
 tgatcaagaa gtgttcattc aaacgggtta ctcagacttt gaacctcaga attgtcagt 60
 30 gtcaaaattt ctctcatatg atgatatgaa ctcttacatg aaagaagctg agattgttat 120
 cacacatggc ggcccagcga cgtttatgtc agttatttct ttagggaaat taccagttgt 180
 tgttcccagg agaaagcagt ttggtgaaca tatcaatgat catcaaatac aattttttaa 240
 35 ttcgattgcc cacctgtatc ccttggcttg gattgaagat gtagatggac ttgcggaagc 300
 gttgaaaagg aatatagcta cagaaaaata tcagggaat aatgatatgt tttgtcataa 360

40 <210> 612
 <211> 384
 <212> DNA
 <213> Streptococcus agalactiae

<400> 612
 45 tgaggtttga tgagaactta aaaattgggtg aggatttact ttttaattgc aaactcttat 60
 gtcaagagca ccgtatagtc gtagatacga cttcttcctt atatacttat cgaattgtaa 120
 aaacttctgt aatgaatcag aaattcaacg aaaactcatt agattttata acaattttta 180
 50 atgaaataag tagtttggtt cctgccagat tagctaatta tgttgaagcg aaatttttaa 240
 gagaaaagat aaagtgtctc cgaaaaatgt ttgaattagg tagtaatatt gacaataaaa 300
 tcaaagtaca acgagagatt tttttcaaag acattaaatc ataccggtc tataaagcgg 360
 55 tcaaatactt atcattaaag ggat 384

EP 1 770 171 A1

<210> 613
 <211> 514
 <212> DNA
 5 <213> Streptococcus agalactiae

<400> 613
 ggggtgtcag aagctagaaa ctatggaatt tatcattcaa agggaaaata ottaactttt 60
 10 gttgattcag atgataaagt ttcctctgat tacatagcga atttgtataa tgctattcaa 120
 aaacatgatt cgtctatagc tatcgggtggc tatttagaat tttatgaaag acataatagc 180
 ataagaaatt atgaatattt agacaaagtg atatcagttg aagaagcact actaaacatg 240
 15 tatgacatta aaacttatgg ttcaattttt attactgcat ggggaaaatt attccataaa 300
 tctatattca atgatttaga atttgcatta aataagtatc atgaggatga gttctttaac 360
 tataaagcat acttaaaagc taattctata acatacatag acaagcctct ctatcattat 420
 20 cgtatacgag taggtagtat catgaataat agtgataatg ttataattgc tagaaagaaa 480
 cttgatgttt tatcagcatt agacgagcga ataa 514

<210> 614
 25 <211> 524
 <212> DNA
 <213> Streptococcus agalactiae

<400> 614
 30 tattcttggg tggttctgtc gtaaaacgag taattaaaac ttacttattt aaaaagtatg 60
 ttccgtatgg tttttcaaaa tattgtctct caattgaggt taattcttta gtggggttac 120
 ctcatgacat aaggagtaag aaatataaag aactaccgag aaaaaaatta tttgatagtc 180
 35 ttaacaaaga acaaaaatca ctgattttca aaatatttaa aacaaaacca ttaactataa 240
 ctccaaagtc agtattattg ttgacacagc cacttgacac agataaatgt tataaaacac 300
 ctacagagag gtttcaaagt attcaagagc aatacgatta ttttgacgat attgtccagg 360
 40 aatatagaac gttagggtagc aatgtttatt taaaagttca tcctagagat gtagtagatt 420
 attccaaatt gccggtagag ctattacat caaatgttcc tatggaaatt atagagttga 480
 tgtcaacagg tcggttcgaa tgtgggataa cacattcgtc cact 524

45 <210> 615
 <211> 613
 <212> DNA
 <213> Streptococcus agalactiae

50 <400> 615
 tacactcggg aatttattgg tgcaaggatt agcctttatc acacttccca tctatactcg 60
 ggttatctca acagaagttt atggccaata tagtttatat gtcgcttga tgaatattat 120
 55 tatgcttttt attggccttc agacgagcgg ttctttaagt tcagcccggt tcaaatacgg 180

EP 1 770 171 A1

	agaagaat	ttt	aaaagctatt	cagggag	gtgc	cttttctg	ta	ggtaatat	at	ggtttcttat	240				
	tatactttt	g	atagcttttc	tatttaga	ag	ttttcttg	ca	ccattagt	ttg	gtttttctga	300				
5	atctat	tttt	ttattaat	gg	tgtgtcaa	ag	ttacgctag	c	tatgtgg	tga	ctttctttgg	360			
	tcagtatt	ttt	atacaaca	ac	agaggag	ttt	ggctaatt	ta	atattatc	ct	tagccaat	gc	420		
	agtttcat	ct	gttgca	ctat	ctctatt	tttt	aatttttc	at	tggtccg	atg	actttttat	c	480		
10	taggggt	tttt	ggagctttt	g	ttcctact	at	aataactg	ga	atagttgc	ct	ttgcttata	t	540		
	ttattatc	at	agcaaatc	tt	tttacaat	cc	taagtatt	ttt	cggttcatt	g	tcaactgt	gtc	600		
	tgttccct	tg	att										613		
15															
	<210>	616													
	<211>	451													
	<212>	DNA													
	<213>	Streptococcus	agalactiae												
20															
	<400>	616													
	tcaggact	gt	ttattttt	at	gattaaac	ga	aacttcct	tct	aataaat	agt	caataaat	ttt	60		
	ttgtcc	catt	tttgaa	agg	gt	gtttgt	c	gtgtcg	gata	tagaca	aatat	caataac	atc	120	
25	atccac	gtca	agaggg	attg	cgacaat	ttc	gtcacg	ttc	aattttg	agt	tgaggata	acc	180		
	agttgcc	act	gtataac	cat	ctaatac	caat	cattaa	aatta	aacagag	ttg	ctctatc	act	240		
	gacaaca	atg	gattttg	gg	gaggaat	ttg	agacat	catt	tcctcag	aaa	agtagaa	aga	300		
30	attatgc	agg	ccttgat	cat	aactcag	ata	aggata	aatct	tctaaat	cct	tcatact	ttaa	360		
	ttttttt	cta	ttagcta	agg	gattgg	attt	gctcac	gaaa	atatgag	gtg	tagtagta	aaa	420		
	aagagtt	gtg	gcaatta	agg	aattatc	gtc	g						451		
35															
	<210>	617													
	<211>	361													
	<212>	DNA													
	<213>	Streptococcus	agalactiae												
40															
	<400>	617													
	aaagt	tcgta	ttgggt	catg	tctgtg	ccat	taaagag	agc	tacaaa	agcg	ttaacc	acaa	60		
	atgcat	agt	gtg	aagaa	acgctg	aaaca	gctcac	gact	tgtatt	atca	cccttata	aac	120		
45	gctctt	caag	aagtgc	tgtt	tctaga	aa	tttgtc	gcgc	atatga	caga	aattcc	atac	180		
	catct	ttt	gt	taacgt	tatt	cctttt	ggat	ttcga	ataaaa	aattt	ggata	cccatct	cag	240	
	tctca	agg	gtt	cctaac	agcg	tttgaa	agtg	aagg	ttgg	gt	aatgtag	agt	tgtttag	cgg	300
50	cttcatt	cat	gctacc	agtt	tctaca	aatct	taataa	acata	ttgta	aatt	gt	tgaatt	ctca	360	
	t													361	
55															
	<210>	618													
	<211>	383													

EP 1 770 171 A1

<212> DNA

<213> Streptococcus agalactiae

<400> 618

5	cgtttcctta gggactggtt tatctgcggc gatgatttta cctatttttag cctttattca	60
	tactagttca gcttttacga ctcttagcac aattgtaggg acttttattg gttttatttc	120
	aggagtatat ctctcaattg gctcggtagg aaaagcatta caacagggtta tgacatgggt	180
10	tccattgact caaatcaatt ctcttttgaa acaggtctta atgaagggtt ctattgcgaa	240
	ggtatttgac aaagccaacg aagccactgt ctctaactat aaagaatcat atggtgttgt	300
	tttgcgtaat gctgatggag aaaggctgag taatcacttt atgttgattt atatcattgc	360
15	cctcattctt attttattgg caa	383

<210> 619

<211> 535

<212> DNA

<213> Streptococcus agalactiae

<400> 619

25	ttacctatgg ttgttttagat tggaatagta gcttttagtgg ttttctttta attgattcga	60
	aaagtgcgtag tggacaggca atcacttatc tatataaaac tatcttaaag aagataacaa	120
	aactgaagtt ttctaataatc tataccgaaa tcagtaacta caataaacc tccttagctt	180
	tatcaaaatt gaatggcttc aaagagtatg ataagacata tgaagacata ctgcattgtc	240
30	gatcattgag tagtcacctc cctaagatat tgaatacgtt tcgtatttcg aattattatg	300
	gtaaaacata cgacatatca actttttcaaa ttatggagga aattgaaaat cccttggaag	360
	aggagacaga aattaggacc aaagtctctg atgaagaaat attattttaa gcagaagata	420
35	gtgcttcaact tccttattat ttaaaaatga gcttggttca aatggaaatt gctaagttag	480
	ataaccgtta tgtttttacaa gttgactttt tatcggaaca agtaaagagg gttcg	535

<210> 620

<211> 519

<212> DNA

<213> Streptococcus agalactiae

<400> 620

45	ctggtgaaga atgtgaagaa gccttagacc ttgtgattcc taagaatatt gtatttgcag	60
	atacagatac ttgtggctac acttttttac tcaatgaaga tggaacagtt tatgatgatg	120
	tgactttcta caaatattgat gataaatatt ggttggctag tcataaagct ttggattctt	180
50	atttagacaa catcaatttt gactataaccg taacagatat ttctgacgag tataaaatgc	240
	tgcaaatga aggaagatat tcgggagaaa ttgctcagtc attttatgaa tatgatattt	300
	caacacttaa ttttcgtact ttgatagaga tgacttataa aggtgagaaa ggttatcttg	360
55	ctagatttgg tttttctgga gaatttggct atcaattttt cctaccatct tctatttttg	420

EP 1 770 171 A1

ctacttttgt ttcggatgtc tgtgaaggta tagcagagtg tggggatgaa cttgatagat 480

atthaagggt tgaagtggga caaccatta ctgatatth 519

5

<210> 621
<211> 573
<212> DNA
<213> Streptococcus agalactiae

10

<400> 621
cgagcataaa cagcatctct tcgacttaaa agaaggaatt tctaaacatt tatataaaaa 60
tcacgactct attttagaat cttatacagg aagcataact agtgaccag aggttcctga 120
15 gcaatacaaa gatgagacac gtaattttta atttgctttt accgcttttg aagaggctct 180
tgcttcttca ggtgttaatt taaaagctta tcataatatt gctgtgtgtt tagggacctc 240
acttggggga aagagtgtgt gtcaaaatgc cttgtatcaa tttgaagaag gagagcgtca 300
20 agtagatgct agtttattag aaaaagcatc tgtttaccat attgctgatg aattgatggc 360
ttatcatgat attgtgggag cttcgtatgt tatttcaacc gcctgttctg caagtaataa 420
tgccgtaata ttaggaacac aattacttca agatggcgat tgtgatttag ctatttgtgg 480
25 tggctgtgat gagttaagtg atatttcttt agcaggcttc acatcactag gagctattaa 540
tacagaaatg gcatgtcagc cctattcttc tgg 573

30

<210> 622
<211> 610
<212> DNA
<213> Streptococcus agalactiae

35

<400> 622
tcttatcatc tgetgttcc atttctaaga atgaatcact ttctataacc tatgaaaaag 60
ttgtagtagaa tttcaacgac tttgaagcat tacgctttta aggggctaga ccacccaaaa 120
40 ctgtcaaccc agcacaattt aggaaaatgg atgatttttc caaaatggtt gccgtaacaa 180
cagctcaagc actaatagaa agcaatatta atctaaaaaa acaagatact tcaaaagtag 240
gaattgtatt tacaacactt tctggaccag ttgagggtgt tgaaggatt gaaaagcaaa 300
tcacaacaga aggatatgca catgtttctg cttcacgatt cccgtttaca gtaatgaatg 360
45 cagcagctgg tatgctttct atcattttta aaataacagg tcctttatct gtcatttcga 420
caaatagtgg agcgcttgat ggtatacaat atgccaagga aatgatgct aacgataatc 480
50 tagactatgt gattcttgtt tctgctaata agtggacaga catgagtttt atgtgggtggc 540
aacaattaaa ctatgatagt caaatgtttg tcgggttctga ttattgttca gcacaagtcc 600
tctctogtca 610

55

<210> 623

EP 1 770 171 A1

<211> 606
<212> DNA
<213> Streptococcus agalactiae

5 <400> 623
agcgatatga tgctttcttt tctctttcaa cagactttta ttttttatca gaagaagaaa 60
ttgaacgcac ctgttctatt gaaagagact tgttacgccca agaaaaattt gatgctgtat 120
10 tgacagggtta ccgtctatct attgttacaa gttgtcgttt agaaagcata ccattaattt 180
ggattatttc aggggcaacg catatcagtg aaattgttga aaactcagaa ggaatattgc 240
ctaattgggaa gataagtaaa gctagtaagc ctcaaacaaa ggattttatc aaaagagtaa 300
15 tcactactta ttcaacaaat gttaaaacgt ggaataacta tattaataaaa tatgggtggca 360
aaccttttaa taatgcttta gaattattta ctggtgatct aaacttggtg acagattact 420
ctttgtttta tgaatttgat aaagattcgt cctataaaaac gataggacct attttgatag 480
20 ataattgtagg tttttcaaaa tgcagccaaa ttaatcaaga caataagact gtactgctca 540
gctttggtac ttcattttaa cgagattggg tggaatcttt tttaaagaca ttaccaaggc 600
attatc 606

25 <210> 624
<211> 511
<212> DNA
<213> Streptococcus agalactiae

30 <400> 624
aaaaataggc agtctacatt ggagaataat ttatctggcg atcggttgat gagatatcaa 60
caagcaaata gacaggtaag caaagataaa ctgttaacag ggagttattt tgtgtaccaaa 120
35 tgcttaaaaa agttaggttt taccaataag atttgtcagg aatctttttc tagtggttagt 180
agttatttaa ttggtttgcc aaaggggaaa attagttact ctaattctgg tgactatcat 240
attctaacct atgctcccag tggttcaact ggggttgata ttgagaaata caaagataga 300
40 tcagaacaaa cctacacaaa ctacctagga gaatcagtta gtagtgatat ggattctaaa 360
ttattatttt ataaggcatg gttacaaaaa gaaatttcct ataaatgtgg gaaatctata 420
gatattacct atcaaacaat gatagatggc tatatttatg gttatgcttt tgataatact 480
45 tttaaagtag aagcgggtta cttaaagaa t 511

50 <210> 625
<211> 231
<212> DNA
<213> Streptococcus agalactiae

<400> 625
agtaatggcc aattgttgcg gaataacctt attcttcaat taactcacga gttaaagctt 60
55 ctaggtgatt ttcattttct tcaatttccc cacctggaag aaaccaagca ccattaggtg 120

EP 1 770 171 A1

cctgtactaa aataatTTTA tcatgagttg gatttggaat aatagcatag acaccaaATC 180
gtgacctata gtttacatta tctatTTTTT caccgaaagt aggattagtc a 231

5
<210> 626
<211> 240
<212> DNA
<213> Streptococcus agalactiae

10
<400> 626
aatccctTTTg gcttgagaag gagttgcagt ttggttgCGa ttattatttc gtccattacc 60
gtttcctcca cctcggtttc ctctgattg tgtaggagga gtgtttggta aatcttggcc 120
15
attaaaggct ctgaaattat ttaaAtctcc aaagaaATca tcaaagaaag gattgatgcc 180
accaggcgca tgtgaaacat gatttaaacc tgaaaaaagt ggattattag ggtcagtttt 240

20
<210> 627
<211> 400
<212> DNA
<213> Streptococcus agalactiae

25
<400> 627
ctattataaa gaacgagggc aaacactttt agacgttttg caaaccattt acgataaatt 60
tggtatttac aacgagcgcc aattttctct tgagttagag ggtgctgagg ggcaagaacg 120
tattagtcgt attatggagg attttagaca ggaccaata ttacaagtag gtgagatgac 180
30
attggagaat tctattgatt tcaaggatgg ttataaggat tttccaaagc aaaattgttt 240
aaaatattat tttaatgagg gttcatggta tgctttaagg ccgtcaggga cggaacctaa 300
gataaaatgt tacctttata cgattggttg tacagaagca gatagtttat cgaaacttaa 360
35
tgcaattgag tcggcttgtc gtgctaaaat gaatagtact 400

40
<210> 628
<211> 628
<212> DNA
<213> Streptococcus agalactiae

45
<400> 628
ccctaaATca agccataaag gtgattatgg tagtgttctt ctgataggag gtttttatcc 60
ctatggagggt gctattataa tggcagcttt ggctgtgtc aaaactggtg caggattagt 120
tactgtagca acccaaagtt gcaatatccc ctctttgcat agtcaactac cagaggtaat 180
ggcgtttgat agtgatgatt acaaAtgggt ggaaaaATca attgttcaaa gtgatgttat 240
50
tgtaattggT cctggattag gagtatcaga atcatctcga aaaattttga accagaccat 300
ggagaagatt caatcacatc aaagtgtcat ccttgacgga tcagccttga ctctgttatc 360
agaaggTgcg tttccgcaaa caaaggctaa aaatttagtg ttgacacctc atcaaaaaga 420
55
atgggagcga ttgtcaggta tcgctgtatc gcaacagaca aaagaaaata cccaaacgcg 480

EP 1 770 171 A1

	tcttaaattct tttcccaaag ggacgatttt agtogctaag agttcgcata cgcgtatttt	540
	tcaagattta gacgaaaaag aaattatagt aggaggtcct taccaggcga ctggagggat	600
5	gggggatact ttgtgtggta tgattgca	628
	<210> 629	
	<211> 388	
10	<212> DNA	
	<213> Streptococcus agalactiae	
	<400> 629	
	agttttatct attgacgatt taagcttgat tcatattaat aaaacgggac gctgtttagc	60
15	ttatcccttt gttgcagcag gtatttttagc tgagaagtcg gaagaagtaa aaggaaaact	120
	gcatcaagct ggcctttttaa tcggtcatgc ttttcaagta cgtgatgata ttttagatgt	180
	gactgctagt tttgaagaat tggggaagac accaaataaa gacattgtag cagaaaagac	240
20	aacttatcca aattttattgg gtttgataa gtcacaggaa atacttgatg atactttgaa	300
	aaaagctcag gcaatttttc aaaatctaga gaaaaaagct aactttaatg ctagaaaaat	360
	aatagatata atagagggat tacggttg	388
25		
	<210> 630	
	<211> 410	
	<212> DNA	
	<213> Streptococcus agalactiae	
30	<400> 630	
	tggtcttaac catgctgttg aaacacaaca tgagttgtta cgcagattgg aagcttatgg	60
	ggtaactcta actcaagcaa ctatttcacg tgatatgaat gaaattggca ttataaaagt	120
35	gccatcagca aaaggctcgt atatttacgg ttigtcaa at gaaaacgacc ctatctttac	180
	aactgctgtg gcaaagccta ttaaaacaag tattttatca atatcagata agctactagg	240
	tttagagcaa ttatcaata ttaatgtcat accaggtaac agtcaattaa ttaaacctt	300
40	cataatgtca cattgtcaag aacatatttt tagtttgaca gctgacgata atagtctcct	360
	tttgattgca aaatcagaag cagatgctga tcacattcgt caatcaatga	410
45		
	<210> 631	
	<211> 240	
	<212> DNA	
	<213> Streptococcus agalactiae	
	<400> 631	
50	taatgaatga aggtgtggaa catatcattg caattcattt aacgcataca ctatcaggaa	60
	ctattgaagc atcacgccag ggagctaata ttgctgggtgc agatgttaca gttattgatt	120
	ctacttttac agaccagtgt caaaaattcc aggttgtaga agctgcgaaa ttagctaaag	180
55	aggagctga tttagatacc atcttggtc gtgtggaaga agtacgccag aagtcagaat	240

EP 1 770 171 A1

<210> 632
 <211> 240
 <212> DNA
 5 <213> Streptococcus agalactiae

<400> 632
 aatgggcatt tctottattg ttggcaatta acctttcctt cacagcagtg attgcaagtc 60
 10 gcttaattca agtacgtgag cctaatacag gaaaaatttc gactggggta caagataaag 120
 taaaagtagg tactttttacg accaataagt cgcaactgaa taagacaatt gcactttatt 180
 taaaacaata tcaaactaag aagatgaatt ataagattta tgcgtgcttca tcttctatac 240

15 <210> 633
 <211> 200
 <212> DNA
 <213> Streptococcus agalactiae

20 <400> 633
 tcgaaacctt tctgaggtaa caaaggaggc tgatatacctt attggttgcga ttggtcaggg 60
 gcactttggtt acaaaagact tcgttaaaga aggtgctgtg gtgattgatg ttggatgaa 120
 25 tcgcatgaa aatggtaaat tgattggaga cgttgtatth gaacaagtgg cagaagttgc 180
 tagtatgata acacctgttc 200

30 <210> 634
 <211> 545
 <212> DNA
 <213> Streptococcus agalactiae

35 <400> 634
 tgaatctgga atgtttgata agaaagatat ttttgttagt acagattcag aattgtacag 60
 agagatttgt ttagaacgag gtatttcagt ggtgatgaga aaaccggaac tttcaactga 120
 tcaggcaact tcgtatgata tgttaaaaga ttttttatct gactatgaag ataatacagga 180
 40 gtttgtgtta cttcaagtaa cttctccact aagaaaatca tggcatataa aggaagcaat 240
 ggagtattat tcttcacatg atgttgacaa tgttgtaagt ttttctgaag ttgagaaaca 300
 ccctagtctg tttacgacat tgtctgataa aggcctatgct atagatatgg tgggagcaga 360
 45 taaagggttat cgtcgccaag atttacaacc tttatactat ccgaacggcg ctatthtttat 420
 ttctaataaaa gaaacttact taagggaaaa aagctthtttc acctctagga catatgctta 480
 tcaaatggca aaggaattht cattagatgt tgatacgaga gatgatthta tocacgtcat 540
 50 cggtc 545

55 <210> 635
 <211> 557
 <212> DNA
 <213> Streptococcus agalactiae

EP 1 770 171 A1

<400> 635
 ttattctttc gacgggtatg gcggtaatgg aagagatcca tcaagcgggtg aatatttttac 60
 5 gtcagaatgg tacaaccgac atttctatatt tacattgtac aacagaglac ccaacacctt 120
 acccctctct aaattttaaac gttattcata ctttgaaaga tgaattttaa gattttaacga 180
 taggttattc ggatcattca attggatcag aagtacctat cgcagcagca gcaatagggtg 240
 10 cagaagttat tgaaaaacac tttacttttag atactaatat ggaagggtccg gatcataaag 300
 ccagtgaac acctgatatt ttagctgctt tagttaaagg gggttcgcatt gttgaacaag 360
 cottaggtag atttgaaaaa atcccagatc cagtagaaga aaaaaataag attgttgctc 420
 15 gtaaatcagt agttgcttta aaaccaatta aaaaaggcga tattttattca atagaaaata 480
 ttacggtgaa gcgccaggt aatgggtattt ctctatgaa ctgggtatgat atcttgggac 540
 aagaagcgca agatgat 557
 20
 <210> 636
 <211> 532
 <212> DNA
 <213> Streptococcus agalactiae
 25
 <400> 636
 gctgaatacg gaataatgaa gccattgatt caaagattat caaaagataa agaagtcaac 60
 ttacaaatta ttgcaacagc aatgcatctg gaagaaaagt acggctatac ttatcgtcaa 120
 30 attgaagaag acggttttga tattgcttat aaagttccct tacatcttta tgatactgac 180
 agaagaactg tatctactgc aatggcgcat ttacaactag gattgaccaa aatttttgac 240
 aaggaagact atgatctagt catcatttta ggggatcgtt atgaaatggt accagttgtg 300
 35 aatgtagcgt tgatttataa tgtcccagta tgccaccttc atggagggga gacatcatta 360
 ggcaattttg atgagtatat tcgccatgca attactaaga tgagtcacct acacttagtc 420
 tctacagagg attttcgtca acgtgtgatt cagatgggag aacaacctca atttgtaatt 480
 40 aacacaggag ctctcggagt ggaaaatgct ctatcaattc ctctctaac ca 532
 <210> 637
 <211> 507
 <212> DNA
 <213> Streptococcus agalactiae
 45
 <400> 637
 agtcatgctg atgcgattgc tccggttatt gatcctcttg tgtatgattt cgtagggtttt 60
 50 tttgatgata aagatattac ggagcatgat gggtatcctg ttcttggaag actttatgat 120
 gtgctacctt acctgaaga tggtcctaata gatgcagtat ttattacaat aggtgataat 180
 gctaaaagga aagaactatt tgaatatgta gcaaaggatt attatgactt tattattaac 240
 55 atcattagtc ccaatgcttt agtattgaca ccagatagta tttgtggacg tgggtatcttt 300

EP 1 770 171 A1

	attgggttttg gggcttttat aggttctaaa gtgaagctgt ttgataacaa tgttggttaat	360
	acaggagcgc tcattgaaca tcatactgtt gtagaatcac actgtaatat agcacctaac	420
5	gctaccataa atgggtctttg ttatattaga gaagaagttt atgtaggtag tgccagtgtt	480
	attattcaaaa ccttggatat ttcacgc	507
10	<210> 638 <211> 510 <212> DNA <213> Streptococcus agalactiae	
15	<400> 638 gcatgaccaa gaggaactaa tgaaacctaa catgcacatt ctgatgttag atgaatttgg	60
	taatacagaa tttaatgtca taaaagaacg ttatcaaagt ctttttgatg cttatcgtca	120
	gcttcgtaaa cgcgtattgg ataagcaaaa aaatgaacaa gagaataaat cacgtattga	180
20	aatgctagaa tttcaaatac cagaaattga gtctgtagcc cttaaatcag atgaagacca	240
	aacgctactc aagcaacgtg ataaattaat gaatcataag aatattgcag atactttgac	300
	aaatgcatat cttatgttag ataacgaaga gttttcaagt ttatcgaatg ttogttctgc	360
25	aatgaatgac cttatggcct tagaagaatt tgatcgagaa tataaagatc tttccaccaa	420
	tccttcagaa gcttactacg ttattgaaga agttactaaa cgtttaggtg acgttatcga	480
	tgatttagat tttagcgtg gtttactaca	510
30		
	<210> 639 <211> 627 <212> DNA <213> Streptococcus agalactiae	
35	<400> 639 aataccttga aatgtgtcgt gattatgctc tcagccaagt tgacaaacaa cgtgatgatt	60
	ttaaacgtct ggcgtttct gccgattggg aaaatcctta tattacacta acaccagatt	120
40	atgaagcaga tcaagtacgt gttttcgggtg ctatggcaga taaaggatat atctatcgtg	180
	gtgctaacc agtgatttgg tcatggcat cagagtctgc ccttgctgag gctgaaatcg	240
	aatatcatga tattgattcg acatcactct actatgcaa taaagttaaa gatggtaagg	300
45	gaattcttga tacagatacc tatatcgtcg tttggacgac aacaccattt actgtaacag	360
	cttcacgagg tttaacagta ggaccagata tggagtatgt tgtagttgta ccagtaggta	420
	gtgagcgtaa ataccttctt gcagagggtt ttgtagatag tctcgctgct aagtttggct	480
50	gggaaaactt tgaaattgtg actcatcaca ctggtaaaga acttaatcac attgttacag	540
	aacatccatg ggatacagaa gtagaagagt tggttatcct tggagaccat gttacaacag	600
55	attctggtac aggtattgtc cacacgg	627

EP 1 770 171 A1

<210> 640
 <211> 326
 <212> DNA
 <213> Streptococcus agalactiae
 5
 <400> 640
 acatatgatg tatctatctg gaactctagt ggctgggtgca ttgttatttt caccagctgt 60
 attagaagta catgctgata aagtgacaac tccacaagtg gtaaatacatg taaatagtaa 120
 10 taatcaagcc cagcaaattg ctcaaaagct tgatcaagat agcattcagt tgagaaatat 180
 caaagataat gttcagggaa cagattatga aaaaaccggtt aatgaggcta ttactagcgt 240
 ggaaaaatta aagacttcat tgcgtgccaa ccttgagaca gtttatgatt tgaattctat 300
 15 tggtagtcgt gtagaagcct taacag 326
 <210> 641
 <211> 210
 20 <212> DNA
 <213> Streptococcus agalactiae
 <400> 641
 tatacaaaat caaaacttga taaggaaatc tggaatacac gctttactag agataaaaaa 60
 25 gtacttaacg tcaaagaatt taaagtttac aatactttaa ataaagcaat cacacatgct 120
 gttggagttc agttgaatcc aaatgttacg gtacaacaag ttgatcaaga gattgtaaca 180
 ttacaagcag cacttcaaac agcattaaaa 210
 30
 <210> 642
 <211> 230
 <212> DNA
 <213> Streptococcus agalactiae
 35 <400> 642
 ggagcgcgtt tagtttacgc agtagatgta ggaacaaatc aattagtttg gaagttaacgt 60
 caggatcatc gtgttcgttc tatggaacaa tataatttta ggtatgccca aaaagaagat 120
 40 ttcaaggagg gactgcctga atttgcatcg atagatgtct catttatctc tcttaatttg 180
 attttaccag ctctaaaaga aatttttagtg gatgggtggac aagtagtggc 230
 45
 <210> 643
 <211> 522
 <212> DNA
 <213> Streptococcus agalactiae
 <400> 643
 50 ctagggaatg gtctgcttggt attgataaag aaaatactgc tgataaatca cctattatcc 60
 aacgtaccga acaaggccaa gtaagtctat ccagcgacaa aggctttaga ggtgctgtaa 120
 cacaaaaagt gaacattgat ccactaaaa aatatgaggt caagtttgat attgaaacaa 180
 55 gtaacaaggc tggacaagct ttccttcgta ttatggagaa aaaagataac aatacgcgac 240

EP 1 770 171 A1

	tttggctttc tgagatgacc agcgggtacta ctaacaaaca taccttaaca aagatatata	300
	acccaaagtt agatgtctcc gaggtgacac ttgaacttta ttatgaaaaa ggaacaggtt	360
5	ctgttacttt tgataatata tcaatgaaag caaaaggccc taaagactca gagcatccac	420
	aaccgcgtcac aacacaaatt gaaaaaagcg ttaatacggc tttaaacaaa aattacgttt	480
	ttaataaagc tgactaccaa tacactctaa ccaatccgtc tc	522
10	<210> 644 <211> 586 <212> DNA <213> Streptococcus agalactiae	
15	<400> 644 tcccacttaa ctatgttgct cttggagatt ctctgaccga aggtgtgggc gatacaacct	
	ctcaagggtgg ttttgttcca ctgctatcag aatcactcca taatcgatac tcttaccaag	120
20	tgacttctgt taattatggt gtgtctggga atactagtca acaaatttta aaacgtatga	180
	cgacagatcc tcaaactgaa aaagatttag agaaagctga tttattgacg ctaactgttg	240
	gtggtaatga tgtcttggt gttattcgta aagagctcag tcatttatca ctaaattcct	300
25	ttgagaaacc agcagaagca tataaggaac gtttgaaaga aatccttgca aaagcaagac	360
	aagataatcc taaattgcct atttatgttt taggcattta taatcctttt tacctaaact	420
	ttccacaatt aactaaaatg caaacgtta ttgataattg gaataaagct acaaaagaag	480
30	tagttgatgc ttcagaaaat gtttattttg toccaattaa tgaccgcctt tataagggaa	540
	taaatggtaa agaggggtatt acagagtcac caaatagtca ggcaag	586
35	<210> 645 <211> 511 <212> DNA <213> Streptococcus pyogenes	
40	<400> 645 tagctcatat tgtcgcaaag acaagtgttg ctattgcttt ggctggagca atgggtagca	
	gtttatttagc taatagcaca acgtacgctg ttagtggcaa agaaaataaa aaaagcgatg	120
	tcaaatatga aacgacaaaa gttatggaag ctaacgcaac ttctctctaaa gaagacaatc	180
45	atgtcatgca cacattagac ggctcaatga gtactgtctg ggaggaaaat tcacctggtg	240
	gtggtgttg tgagggtactt tcctacaagt ttgcgtcccc gatgcatatt gggagaattt	300
	taattgttaa tggagacaca tctagcaagg agaattacta caagaaaaat agaattgcaa	360
50	aggctgatgt taaatactat aacgggaata aattggtcct ctttcaaaaa attgaattag	420
	gcgacacct cactaaaaaa ccgcatcaca ttgagattga taaaaaatta gatgttgatc	480
55	gtattgatat tgaggtaaca gaggtccatc a	511

EP 1 770 171 A1

<210> 646
 <211> 300
 <212> DNA
 <213> Streptococcus pyogenes

5

<400> 646
 ttaaatacgc taaagccctc ttgagggtt ttttagatac aattgacatc ttaaaatgga 60
 taccagtttc tgtgaaacaa tctttgattg tgaacaaaca aagcataatt tagagtatta 120
 10 aaatctggac cctgctatct atggtaagtc tttttgttat tgttaaagag gttaagcgga 180
 atgttaatat gttttagcta aaaaatgtag tgaaaaatga gtaogtagac tattgtaata 240
 gtaattcogt aaaattgttg aaaaagaaaa tgggaaatac cttgtcaaat taagcacctt 300
 15

<210> 647
 <211> 579
 <212> DNA
 <213> Streptococcus pyogenes

20

<400> 647
 ccggttatgt taatggaaag agaaaatata ttaggcgaga aggtttcaaa actaagcagg 60
 ctgcaaggga aaccttaatt agtttacaag ctgaacttga taaacctaaa tcaagtatga 120
 25 catttggagc attgacagat caatggctaa aggaatatga aaaaaccgtt cagggcagta 180
 cctacttaaa aacagaaaga aatattaata aacatatttt gccaaaactt gataaagtga 240
 agattggaga catcaatcca ctacttatcc agcggcttac tgaagaatgg tgcaacgatt 300
 30 taaaatatgg aggaaaaatt cttgggcttg ttaggaatat cttaaactta gctgttagat 360
 acggatatat caataacaat ccagctttgc caattacacc tccaaaaata aaaaggaaaa 420
 gaaaaatgaa taataatttt tatacacttg atcaacttaa acaattcctt gaactagttg 480
 35 aaaaaactga caacattgaa aaaatagcct tgttttagatt attagcattt actggaatac 540
 gaaaagggga gcttctggca ctaacttggg atgatttga 579

40

<210> 648
 <211> 507
 <212> DNA
 <213> Streptococcus pyogenes

45

<400> 648
 gctatttggc cctgtgtagc aaaaaagtgc ctcatcatgt gcggagtaaa atgaacgtcg 60
 caatttttat taattttttt aaataagcag tagatgtaat ggctaccgat tggttttcct 120
 acaaaaagatg gctttacttt ttcgttgtct cctaaaaata ggaaatcagc ottattttaag 180
 50 atgcgatcgt tgcacacggc tattttgata gaagtatcaa tagctttttt tagcagttgt 240
 gatgtctcaa aatctaaata cacatatcgt tccgaataag ctgtcttttag gcctccgcca 300
 tctttttctac ctcttgcctt tgattcgtct atctttacga ccgcacaatc tttatcatta 360
 55 aaagttatat tccctaattt tatgccagct acctcgcttc tacgcaatcc aagatatgtt 420

EP 1 770 171 A1

atcctaacca ttgcgtagtc ataatcatca agcatttttc tggcaacttt atcccaagct 480

5 ttaaatttctt gcattgatct acgttttg 507

<210> 649
<211> 501
<212> DNA
10 <213> Streptococcus pyogenes

<400> 649
gctcacggtc actaataatc tctactgggc gtgcgatatg gctggcaatt tcttttgaaa 60
tatcttcttg atcctcgaaa ttagggatcat cagcagtgag aatgacggtg aggtttggat 120
15 gctgatgaat caccctacca aaatcagctc gtctgtcttc gcctttatct cctgggtgcac 180
ctaaaatcaa catlaatttg cctgtctgat gttcttccac aacgctgagt aatttttcta 240
agctgtcacc attatgggca taatcaacaa aaacttttagc atgatttgct atagtgagga 300
20 cttccatacg gcctgggacg cgagctcttag cgataccttt ttgaatatca gctaggctag 360
cacccaaacg aaggcaggca agtccagctg ccatagcatt ttcttggtta aaatggccaa 420
25 ttaattgaat gtcataatgg ccagctaatt gtccctttagc ttcaaaggag aaggcttggc 480
tagtggtgat ctggttgtca g 501

<210> 650
30 <211> 632
<212> DNA
<213> Streptococcus pyogenes

<400> 650
cccagttcaa ttagattacc ctggtgacca agcaaacgca gcaactgttc aggaagccca 60
35 gtctttcaaa caatctgttg aagcatctct tggtaaagaa aatgtcattg tcaatgttct 120
tgaaacagaa acatcaactc acgaagccca aggtctctat gctgagacc cagaacaaca 180
40 agactacgat atcatttcat catggtgggg accagactac caagatccac ggacctacct 240
tgacatcatg agtccagtag gtggtggatc tgttatccca aaacttgga tccaagcagg 300
tccaaataag gatgttgttg cagctgcagg ccttgatact taccaaactc ttcttgatga 360
45 agcagcagca attacagacg acaacgatgc gcgtataaa gcttacgcaa aagcacaagc 420
ctaccttaca gataatgccg tagatatcc agttgtggca ttgggtggca ctccacgagt 480
tactaaagcc gttccattta gcgggggctt ctcttgggca ggggtctaaag gtcctctagc 540
50 atataaagga atgaaacttc aagacaaacc tgtcacagca aaacaatacg aaaaagcaaa 600
agaaaaatgg atgaaagcaa aggctaagtc aa 632

55 <210> 651
<211> 534
<212> DNA

EP 1 770 171 A1

<213> Streptococcus pyogenes

<400> 651

5 tttgatggtg ttgggtatgg ggcacgtaat tctattttaa tctcagttat agcgacccta 60

attaatatca ccattggggt agtggttagga gccatatggg gagtttctaa agcatttgat 120

aaagtatatga ttgaaattta taacattatc tcaaatatcc cttctatgct tattatcatt 180

10 gttttgacct attcattagg tgcaggattt tggaatttga ttctagcttt ctgtatcact 240

ggatggattg gtgtcgcta ctccatccgt gttaaactct tgogttaccg tgatttagaa 300

tacaaccttg ctagtcaaac tttgggaaca ccaatgtaca agattgctgt taagaacctc 360

15 ctgcctcaat tggtttcagt tatcatgact atgttgtcac aaatgctacc agtttatgta 420

tcttctgaga cttcttattc cttctttggg attggtttac caaccaccac tccaagttta 480

ggacgtttga ttgctaatta ttcaagcaac ttaacaacaa atgcctacct cttt 534

20

<210> 652

<211> 340

<212> DNA

<213> Streptococcus pyogenes

25 <400> 652

tcgaagagat tttctatgat ccaagacacc cctatacatg gagtttgctg tctagcttac 60

cgcagttggc agatgaatct ggtgaacttt acgctattcc aggaacgcct ccatcacttt 120

30 attcaccaat tatcggagat gcctttgcac ttcgctcaga atatgctatg gtttttagact 180

ttgaaaaagc acctccggcg attaacgtat ctgagactca ttgggccaaa acatggcttt 240

tacaccaga ggctccaaaa gttcaaaaac cagaagtcac tcaagggttg catcaaaaaa 300

35 tcttaaggaa aatgtcacia caggaggaag gaaatgtctg 340

<210> 653

<211> 542

<212> DNA

40 <213> Streptococcus pyogenes

<400> 653

caccagacaa cctttctttc aagaccttat caattatctc gaccagcatg atcacgttat 60

45 attacgagag atcaaaaaag ccttttctaa tgtgacaggt attgacaagg ccatcgaaaag 120

ctatgttcaa gctggctata ttcgccgtga aaataagcgt tatggcatca atcttccttt 180

ggtgagttct gatcagcagc tggccttaga cactatgctt tttgtggaca cctgttcagc 240

50 tatgtatgaa aatatttttag cggttgtttt tgagactcag ctaacaaacc aaaccaatcg 300

cgtgatgatc aaggaaaaga ccaacatcac gagagacgat ttgaccctgg ctaattattt 360

ttaccgtctc aaaagaggtg agaagccatc agctgagcag atggacttgt atgacctctt 420

55 gggggatgtg aatcaggaat atgcccttaa atatatgaca acttttttgc ttaaattcac 480

EP 1 770 171 A1

	gcgcaaagac tttgtgatgc aaaaacgtcc tgatatatatt gtggaagctc tggttacact	540
	tg	542
5	<210> 654 <211> 616 <212> DNA <213> Streptococcus pyogenes	
10	<400> 654 ttaatgacag tagcagcatc tattggtggt gtaggtattg ccttggttaac tgaaaattat	60
	gtcaaaaaag acatgaaagc agctgctcgt ttaatcatta acaacattga aatgttagtg	120
15	atgtttttgt tacctgctct tactggggca attattttag caagacctct atattctgtt	180
	ttttacggag ctagcgagga gcgtgccatt cacctctttg tggcgggttct ctttcaaacc	240
	ttgctactgg cgctttacac cctcttttca cggatgcttc aagctctttt tgaaaatcga	300
20	aaagcgattt actactttgc ctatggtatc ttgattaagt tagttttaca gataccgctt	360
	atztatttgc tacatgctta tggctcctta ctagcgacga cgattgcttt agtgggtgccg	420
	atztatttga tgtatcgacg cctatatcag gttactcatt ttaaccgcaa actggttcaa	480
25	aaacgtttat tattaacctt aattgaaacc ttattaatgg gactggctgt gtttgtggcc	540
	aactggctat tgggctatgc ctttaaaccg acaggccgct tgaccagcct tctttacctc	600
	ctcattattg gtggct	616
30	<210> 655 <211> 208 <212> DNA <213> Streptococcus pyogenes	
35	<400> 655 agcagtaatc tttggtactg ttttgggtca tgttctatgt gtoccaattc atgcaagatt	60
	acttttttcc tgtcttttcc agacagggtt ttattaacat agattattcg atgacagga	120
40	taataaaatc ctgacctatc ccacattgtg tctgggaact caaatagttt tatgtttgtac	180
	tgattaagta tctcatctat cttcacca	208
45	<210> 656 <211> 230 <212> DNA <213> Streptococcus pyogenes	
50	<400> 656 ttatctgatt taggacattt atcaaatgaa gatggagcgg gagccatgat tagaagcctg	60
	gggtacaata ccaaaaaaat atacctaggt catctgagta aagaaaataa catcaaagag	120
	ttagcgcata tgacgatggt caatcaactg gctatggcag atttagcagt aggtacagac	180
55	tttacgggtcc atgatacctc tccagatact gcttgtccat taactgatat	230

EP 1 770 171 A1

<210> 657
 <211> 411
 <212> DNA
 <213> Streptococcus pyogenes

5
 <400> 657
 cacgagaagt tcatttcaat ctttatttaa ttgaactgat gagccttttt tagaaagtta 60
 10 tcatgaaacg attacgtcca tatgtgaaag ggtacctaaa agaaagtatc ttaggtcctc 120
 tttttaaatt attagaagct ttatttgaat tattagtccc tttgttaatt gctaacatga 180
 ttgatataatc gattagtcaa cacaacagcc aggggaatttt gaggggttgtt ttaacattat 240
 15 ttggttttagc aaccattggc ttattgcttt ccgttacagc ccagtatttt tcttcgaaag 300
 cagctgttgg ttttacaaga caaatgacag atgatttggt taaaaaatc atgtttttga 360
 gcaaggagga ccaagaccat cttggttatg ctagtctgtt atcacgattg a 411

20
 <210> 658
 <211> 660
 <212> DNA
 <213> Streptococcus pyogenes

25
 <400> 658
 aagaaatgga gcaaacaaac aaggagcttt tgaaatcaag aaaaataaaa gtcaagaaga 60
 atataattat gaagtttatg ataacagaaa catacttcag gatggggaac ataaacttga 120
 30 aataaaaaga gttgatggga caggtaaaac ttatcaaggt ttttgctttc agttaacgaa 180
 aaattttccc actgctcaag gtgtaagtaa aaagctgtat aaaaaattga gtagtagtga 240
 tgaagaaaca ctaaagcaat atgcctctaa atatacaagt aataggagag gagatactag 300
 35 tggtaatctt aaaaagcaaa ttgctaaggt tctgacagaa ggttacccaa ctaacaaaag 360
 tgattggtta aatggattga ctgaaaacga aaaaatagaa gtaaccagag atgcaatttg 420
 gtattttaca gaaacgacag ttccggctga tagaagttat acgaatcgca acgtaaatag 480
 40 tcaaaaaatg aaagaagtgt atcaaaagct aattgataca acagatatag ataaatatga 540
 agatgtacaa tttgatttat ttgtgccaca agatacaaac ttacaggcag taattagtgt 600
 agagcctgtt atcgaaagcc ttccctggac atcgttgaag ccaatagccc agaaggatat 660

45
 <210> 659
 <211> 410
 <212> DNA
 <213> Streptococcus pyogenes

50
 <400> 659
 aacagggtga tcagcatagg ccatgacatt ggtggcttgc atagcccaat gaatggcttt 60
 tttgtcagct ggactaagat ttccaaagta agattgatgg ggaaaacgtc cgtaagaaac 120
 55 caattcgtaa acagttatgc cgttagtgtc ttcttgaact tgaggtaaaa gagctagttt 180

EP 1 770 171 A1

ttttagcaacc tcttttagttt ctaatgtggc aatgttttgc ccattttaa atacaactcc 240
 ctgttttggg ggtaataatc ttgtcagtgc ttttaataaa ctagacttcc cacagccatt 300
 5 ggcgccaata atggtcgtaa ttttaccttc aggaatataa aacgataatt tatcgatgat 360
 ggtacgctgt tcataggcaa ttgtgaggtc ttcagcacta attgttgtca 410

 <210> 660
 <211> 718
 <212> DNA
 <213> Streptococcus pyogenes

 <400> 660
 15 tcaaccata ccattgaaac tagcgccaga aactgcacaa agcggcaaaa ggtatcggt 60
 atgatgagggt gtaaaatggt tcataagatg aggaatgact aagccgataa aagaaatgct 120
 tccagcaatg gctacagctg ctgatgataa aataagaacc aaaatcataa agactgcact 180
 20 gatcaagttg gttttttgcc caagagcttt tgcttgagac tcaacttagac taaggacggt 240
 caggtgataa gataatagct gggctaaaca aagactaaga ataataagag gagcaatata 300
 gccgatcatt tgccaattga ccccgacaag acctcctgct tgccagccga taacagcatt 360
 25 tgccagatga tagtaattgg taataccttg acctaatgct gatagcagta tggaaaccat 420
 agctcctgct aagacaaggc ggagctgatg gtagcctttg ccagattgat aagaaaggcc 480
 aaagactaag gttgctgcca ggctagacc taacaacgaa agcagaataa tgagggaata 540
 30 gtgcaagtga ggtacaaacg cataagccag taccaaggct agtctgctc cagcattaat 600
 gcctaaaagg ccaggctcag cgataggatt acgtgtgatt gcttgcatga tagttccaga 660
 aacagctaac gcagagccag ttaaggtagc accaaaaagt ctcggtaatc gtatagcg 718
 35
 <210> 661
 <211> 574
 <212> DNA
 <213> Streptococcus pyogenes
 40
 <400> 661
 gcaacgaaga cataatcacc aatatagtct ggcaagactt cctgcgacaa tgacaggtaa 60
 ccttgtttaa aaacttcagt cttcactttt tcaggagcat cataatggaa agcttgatgg 120
 45 ataatctctc cgccacgtcc ccagtcttta ccaaaaagggt aaacgtcttt ttcataaagc 180
 ccataatag taaagggttg tttgtcacct gtaacggcct tgacttcttt ttcataagct 240
 gctgttttag ttttccaatc ttttaaccac ttcttggtt tgtcttcttt gttaaagatg 300
 50 cggccgaagt cagataaacac ttgtaataaa tcacgtttgc ggtattcaat cgagataaca 360
 ggcgcaattt ctgccaattg ttaatatatt tcttctgtag agccaacaac aatgaggcca 420
 ggcttaagcg ttgtaacggc ttctaaatca gttgcagcaa cttgctttgc tttttttaca 480
 55 gtctttgcta agatgggggt tttcttgtca taagaagtaa ccccgactag attcatatct 540

EP 1 770 171 A1

	aattttttga ggtaaccagt gtaagttgaa gccca	574
5	<210> 662 <211> 545 <212> DNA <213> Streptococcus pyogenes	
10	<400> 662 tctggatatt actgccaacc agatagactc gtcctactgt atctgcaaca agaagtagga	60
	tcattccgat taaaatacta atgggtattg ttattttatg attactccct accaagtatg	120
	tactaaagtg tccagctatt aagccgataa aactaatatt accaaccaaa agaacactca	180
15	aagcacctaa gccagctgct aagacaagta tcaaacgacg cttacggttt aaagggagtc	240
	ctagcccaat agcagtatta tcagctaata ccataatatt aaggaaatgg gcttgactat	300
	aagtcaatag ccaaaaaacac aataacaaag gagcgatgac actcagagta ggccagtcgt	360
20	ctcctattaa ttggccgcta agccaattga tgaccaaata gactttgtag cgattaatat	420
	gaccaacaag agcaaccatt agacttgaaa gcatggtagt aacagctaca ccagtaagaa	480
25	ttaaccgtgt aggatcaatt tgtccttggt ttgtcaaaga tagccaataa acgctaaagg	540
	ttggtt	545
30	<210> 663 <211> 647 <212> DNA <213> Streptococcus pyogenes	
35	<400> 663 cggtaatgtg cttatagatg gcttatcgca attaatcct attattcaaa aaacaaaatc	60
	tcctatagaa gcggataaaa tggctactat ttatcattgg attaaccatt cttttttccc	120
	tatcatcggt cgtggagaaa tgatggatat gactcgaggg cgttctatca gtctgttttaa	180
40	tgctcaatct catgttgctg gcattgaagc acttcgtgct attttacgta ttgctgacat	240
	gtctgaagag cctcaccgtt tggcacttaa aacacgtata aaaacactcg tcacacaagg	300
	gaatgttttt tacaatgtct atgataatth gaaaacctat cagatatca aacttatgaa	360
45	agagctacta agtgatactt ctgttccagt ccaaaaactt gatagttacg tagctagttt	420
	caatagtatg gataaattgg cactatataa taataaacac gatthttgctt ttggcctatc	480
	catgttttcg aatcgaactc aaaattatga agctatgaat aatgaaaatc ttcattggctg	540
50	gtttacttct gatggaatgt tttaacctata caataacgat ttaggacact acagtgaaaa	600
	ctattgggca acggtaaatc cctaccgctt acctggaacc acagaaa	647
55	<210> 664 <211> 585 <212> DNA	

EP 1 770 171 A1

<213> Streptococcus pyogenes

<400> 664

5 cttactgggc ccaaagggtcc taaaggagac actgggtctcc aaggtaaaac tggaggaact 60

ggctctcggtg gccctgctgg caagcctgga acgacagatt atgatcaact ccaaaataaa 120

ccagatctag gtgcgtttgc acaaaaagaa gaaactaata gtaaaatcac caaattagaa 180

10 tcaagcaaag cagataaaag cgctgtttac tcaaaagcag agtcaaaaat agagctagac 240

aaaaaattga gcttaacagg cggcatagtg acaggacaac tacagtttaa acctaatata 300

agtggattta aacctctatc ttccgttaga ggagcgatta acattgatat gtctaaatcg 360

15 gaagggtctg ctatggtgat gtatacaaat aaagatacta ctgatggacc attgatgatt 420

ttacgtttctg acaaagatac gtttgatcag tcagctcaat ttgtggatta cagcggttaag 480

actaatgctg taaatattgt aatgcgccag ccaagcgcac ctaatttttc ctcggcactt 540

20 aatataacca gtgccaacga aggcggtagt gcgatgcaaa ttaga 585

<210> 665

<211> 537

<212> DNA

25 <213> Streptococcus pyogenes

<400> 665

aatctactga ctaacaagcc aaatattgat ggattagcga caaaagtcga gaccgctcag 60

30 aaactacaac aaaaagcaga taaagagacc gtctatacaa aagctgaatc gaagcaagag 120

cttgacaaga aattaaatct caaagggtggc gttatgacag gtcaactaaa atttaagcca 180

gccgccactg ttgcttattc ctgcgtcaacg ggtggagcgg tcaatattga cttgtcgtct 240

35 accagaggtg ctggtgttgt tgtctattct gacaatgata ccagtgatgg gccgttaatg 300

agcttgcgga cgggtaaaga gacctttaat caatcggcgc tttttgtcga ctataagggg 360

acaacaaatg ccgttaatat tgcgatgcgt cacgcaacca cccccaattt ttcacggcg 420

40 cttaatatta ctacggcga tgaaaatggt agtgcaatgc agctacgagg gtcagaaaaa 480

gcgctaggaa cgctaaaaat tactcatgag aaccaagta ttggagcgga ttatgat 537

<210> 666

<211> 516

<212> DNA

45 <213> Streptococcus pyogenes

<400> 666

50 tttcaacgta tgggttatgt caattatfff tcaagcaaag aattaaaaga taatgcttct 60

aaagtagata gtagtgtaac gacagaagca actagtgtca acaaagctgt ctatgagaag 120

tatattgatt ctcttgga tggtggcag gtaaaacgct tccccactag caaacaggtt 180

55 tatgcaattc gcaatattcc tatttacgaa cgtgtttgga actttttctc aaatctagtt 240

EP 1 770 171 A1

	ggtattgatac acccttgga gattcaggat aaagataatc caaaattagc taggtatatt	300
	cgcctagaaa aagataaatc aggtggctgg tcaattgttg ggtcggggac aaaacataaa	360
5	tatctcctct atactaacgg aaaatttctt tatcttcacc aaaactttgt taccctaaac	420
	ttaggaacat cttatccaac atacagcaat attoctgttc ttcaggttat ttcacaagg	480
	caaggacgaa cagctcttca agatgtgacc ttccca	516
10	<210> 667 <211> 604 <212> DNA <213> Streptococcus pyogenes	
15	<400> 667 tctcactagg caaacctatt atcgttttat taaaaataat cttgacattt cttcgaaaaa	
	gttactttat atcttagaca acttgaatgt caatgttgat gagtttctct ttattagtaa	120
20	taactttaaa caatataaag aattttattga tatggatacg gcaaaacatt attttgaatg	180
	ccgaaacata gaaggtttta atcatatcct tgattcttat aaagatagta agtcaacaaa	240
	ggaaaagaac ctttttgctt tgggtcaagggt gttattagca actottactg aggaagactg	300
25	tctgacagag cggacttatt tgtcaaaacta tottattaat attgagactt ggagtcacta	360
	tgagactgtg ctttttaata attgtatgtt tatttttagag tottgcttta ttgagatggt	420
	gttttcaaaa gttattgtga acctcgataa atacaatacc ctaagggtatt atgggaatga	480
30	atcgattcgg atgtttgtca atatgttgat tttgtttatt cagcgacaag agtatgataa	540
	agcttctgag attttggcaa aaattgaaga ttatcagcta aatgatgatt gcttatatga	600
	acgg	604
35	<210> 668 <211> 522 <212> DNA <213> Streptococcus pyogenes	
40	<400> 668 cagacgatca gcaagataaa gaaatgcctg ttctttcaac aaacggtttt gagccaaaca	
	aggcttacga ctatgcttat gctaatcgtg ggatgaaaga ggatgatattt aaggatgtca	120
45	aaggcaagat tgccttatt gaacgtggcg atattgattt caaagataag gttgcaaacg	180
	ctaaaaaagc tgggtctgta ggggtcttga tctatgacaa tcaggacaag ggcttcccga	240
	ttgaattgcc aaatgttgat cagatgcctg cggcctttat cagtcgaaaa gacgggtctct	300
50	tattaaaaga caatcccaa aaaaccatca ccttcaatgc gacacctaag gtattgccaa	360
	cagcaagtgg caccaaacta agccgcttct caagctgggg tctgacagct gacggcaata	420
	ttaagccaga tattgcagca cccggccaag atattttgtc atcagtggct aacaacaagt	480
55	atgccaaaact ttctggaact agtatgtctg cgccattagt ag	522

EP 1 770 171 A1

5 <210> 669
 <211> 554
 <212> DNA
 <213> Streptococcus pyogenes

10 <400> 669
 cagaaaccac aacgacaagt gagcaaccaa aaccagaaag tagtgagcta actatcgaaa 60
 aagcagggtca gaaaatggat gatattgctta actctaacga tatgattaag cttgctccca 120
 aagaaatgcc actagaatct gcagaaaaag aagaaaaaaa gtcagaagac aaaaaaaga 180
 gcgaagaaga tcacactgaa gaaatcaatg acaagattta ttcactaaat tataatgagc 240
 15 ttgaagtact tgctaaaaat ggtgaaacca ttgaaaattht tgttcctaaa gaaggcggtta 300
 agaaagctga taaatthtatt gtcattgaaa gaaagaaaaa aaatatcaac actacaccag 360
 tcgatatttc cattattgac tctgtcactg ataggaccta tccagcagcc cttcagctgg 420
 20 ctaataaagg ttttaccgaa aacaaaccag acgcggtagt caccaagcga aaccacaaaa 480
 aaatccatat tgatttacca ggtatgggag acaaagcaac ggttgaggtc aatgacccta 540
 cctatgocaa tgth 554

30 <210> 670
 <211> 518
 <212> DNA
 <213> Streptococcus pyogenes

35 <400> 670
 agtgactaag aaacttgatg ttagagatgc tagagatttht tttattaaact ccgaaatgga 60
 cgaatatgca gccaatgatt ttaaagatgg agataaaata gctgtgttct ccgtcccatth 120
 tgattggaac tacttgtcag aaggaaaagt cacagcatat acgtacggcg gaataacacc 180
 ctacaaaaaa acttcaatac ctaaaaatat coctgttaat ttatggatta atggaaagca 240
 gatctctgth ctttacaacg aaatatcaac taacaaaaca acagttacag ctcaagaaat 300
 40 tgatctaaag gttagaaaat ttttaatagc acaacatcaa ttatattctt ctggthctag 360
 ctacaaaagt ggtaaattag tttthcatat aaatgataat tcagataaat attctthtoga 420
 45 tctthtctat acaggatata gagataaaga aagtatttht aaagtataca aagacaataa 480
 atctthcaat atagataaaa ttgggcattth agatatag 518

50 <210> 671
 <211> 612
 <212> DNA
 <213> Streptococcus pyogenes

55 <400> 671
 ttatctgtag ggctcgtctc cgtcggaacg atgetgatag ccccgacagt tttaggacag 60
 gaggttagtg ctagtagtag tacggagagc agtaccacta cagctaatac tggtagcggt 120

EP 1 770 171 A1

	acggcaagtg ggatgactgc cactactcct agtgctacga cagatactgg tgaagcagct	180
5	gggagcggag ctaggagtga agctaattggg gcatcggtccg tagtatctag cgaagaaagt	240
	cagagttcag gcactactcc agcctcacc caagcacaga cagctccagc agcaacgtca	300
	acatcatcgg tttcttctag taatgagaaa actcecaaga cagcaactac aactacatca	360
10	tcgactccag tagcaagtac cagtaataat agcaacaaag taactagtac tgaagctgaa	420
	acacagacgg tggacgtgga acggtataca gttgataagg aaaattcaaa gctaaatatt	480
	aaagacggta agactccaaa aactaggagt agtgттаата aagacacaaa acttattaga	540
15	aaccgcgatg acaaacagcg tgatatcggt gatgttactc ggacagttga aactaacgaa	600
	gatggcctat tg	612
20	<210> 672 <211> 500 <212> DNA <213> Streptococcus pyogenes	
25	<400> 672 gtactagaca tggccgaaaa agtgggaata agtttaccta gtagtctgaa gtcggcagtg	
	aaagtccttg gcttaactaa tagtgcaata ggttctatct tagggaaagg tttgacagag	120
	taccttgggt tgacagaata tagttcagat aacttagatg gaggagggtt tgattatagt	180
30	aaacgtgtag gggaagggtta ctactaccac agtttatcag ataggaaata tgaaaatata	240
	atgccccttg aagaagctat caggacggcc ttagcatcta attttcccaa actcacagat	300
	aattggtttt tcgatatctt aaatagtttt gtcaataaag atacagttga gaaagctaaa	360
35	ttagacgtaa ttatgaagggt acttaatagt attttttaca aaaaagaata tcgctattac	420
	aaccataacc tgtcagcaat agccgaagct aaaatggctc aacaagaggg cattaccttc	480
	tattccgttg atgttactga	500
40	<210> 673 <211> 568 <212> DNA <213> Streptococcus pyogenes	
45	<400> 673 tccaagccaa cttcacagat ctagtttagt taaaaacctt caaaatatat attttcttta	
	tgagggtgac cctgttactc acgagaatgt gaaatctgtt gatcaacttt tatctcacga	120
50	tttaatatat aatgtttcag ggccaaatta tgataaatta aaaactgaac ttaagaacca	180
	agagatggca actttattta aggataaaaa cgttgatatt tatgggtgtag aatattacca	240
	tctctgttat ttatgtgaaa atgcagaaaag gagtgcatgt atctacggag gggtaacaaa	300
55	tcatgaaggg aatcatttag aaattcctaa aaagatagtc gttaaagtat caatcgatgg	360

EP 1 770 171 A1

	tatccaaagc ctatcatttg atattgaaac aaataaaaaa atggtaactg ctcaagaatt	420
	agactataaa gttagaaaat atcttacaga taataagcaa ctatatacta atggaccttc	480
5	taaatatgaa actggatata taaagtcat acctaagaat aaagaaagt tttggtttga	540
	ttttttocct gaaccagaat ttactcaa	568
10	<210> 674 <211> 597 <212> DNA <213> Streptococcus pyogenes	
15	<400> 674 agcattaggt ggatttggtc ttgctaaccc agtatttgcc gatcaaaact ttgctcgtaa	60
	cgaaaaagaa gcaaaagata gcgctatcac atttatccaa aaatcagcag ctatcaaagc	120
	agggtgcacga agcgcagaag atattaagct tgacaaagt aacttaggtg gagaactttc	180
20	tggtctaat atgtatgttt acaatatctt tactggagga tttgttatcg tttcaggaga	240
	taaacgttct ccagaaattc taggatactc taccagcggg tcatttgacg ctaacggtaa	300
	agaaaacatt gcttccttca tggaaagtta tgtcgaacaa atcaaagaaa acaaaaaatt	360
25	agacactact tatgctggta ccgctgagat taaacaacca gttgttaa atctccttga	420
	ttcaaaaggc attcattaca atcaaggtaa cccttacaac ctattgacac ctgttattga	480
	aaaagtaaaa ccaggtgaac aatcttttgt aggtcaacat gcagctacag gatgtgttgc	540
30	tactgcaact gctcaaatta tgaatatca taattaccct aacaaagggt tgaaaga	597
35	<210> 675 <211> 553 <212> DNA <213> Streptococcus pyogenes	
40	<400> 675 tcatactgat ttctacttat ttcacctatc atcaaagtga ctctaagaaa gacatttcga	60
	atgttaaaag tgatttactt tatgcataca ctataactcc ttatgattat aaagattgca	120
	gggtaaattt ttcaacgaca cacacattaa acattgatac tcaaaaatat agaggggaaag	180
	actattatat tagttocgaa atgtcttatg aggcctctca aaaattttaa cgagatgac	240
45	atgtagatgt ttttggttta ttttatattc ttaattctca caccggtgag tacatctatg	300
	gaggaattac gcctgctcaa aataataaag taaatcataa attattggga aatctattta	360
	tttcgggaga atctcaacag aacttaata acaagattat tctagaaaag gatatcgtaa	420
50	ctttccagga aattgacttt aaaatcagaa aataccttat ggataattat aaaatttatg	480
	acgctacttc tccttatgta agcggcagaa tcgaaattgg cacaaaagat gggaaacatg	540
55	agcaaataga ctt	553

EP 1 770 171 A1

<210> 676
 <211> 504
 <212> DNA
 <213> Streptococcus pyogenes

5

<400> 676
 ataatactttc atgggtacgg aagtgtaaaa tcagatagtg aaaatattaa agacgttaag 60
 ctacaattaa attacgcata cgaaatcata ccagtagatt atacgaattg taatattgat 120
 10 tacttgacta ctcatgattt ttatattgat atttccagtt ataaaaagaa aaatttttca 180
 gttgattctg aggtcgagag ctatattaca acaaagttta cgaaaaatca aaaagtaaatt 240
 atttttggtc ttccgtacat atttactcgt tatgatgttt attatatata tgggtggggtt 300
 15 acaccatcag taaacagtaa ttcggaaaat agtaaaattg taggtaattt actaatagat 360
 ggagtcacgc aaaaaacact aataaatccc ataaaaatag ataaacctat ttttacgatt 420
 caagaatttg acttcaaaat cagacaatat cttatgcaaa catacaaaat ttatgatcct 480
 20 aattctccat acataaaagg gcaa 504

<210> 677
 <211> 645
 <212> DNA
 <213> Streptococcus pyogenes

25

<400> 677
 ttgctagtcc cagtctttat gatagtgtaa tagattttga taaatgtaat gaaaagaaaa 60
 30 agcaaaatgt aaaagtctca ttaaatagtt attctaaaag agcagcggtt agaactactc 120
 catttggtat ctttactgct attaatacag ttgatattgac aaagggaacc acttctaattg 180
 taaaaaagggt tagtttttatt aaaaaagcag tcccagatta ttcattggata tattctctag 240
 35 taaaatcgta tgaataaagt aaccttgaaa aactttcatt aaaaataaat acagcggcgt 300
 ttactcaagg tgacagatat gtactaccat ttacagtga tgaatcagag gaagatagaa 360
 acataagttt ttcaaaacca attaagttac ttgtagaaaa atgtaaaact cgatatataa 420
 40 aatatgaaga gtaaatagat gtatttataa ataattatcc agatatagtg tcagacatgc 480
 tagagtcata tatacacgac ttagttacaa atgatttttt aatttcagat ttaagaccac 540
 45 caatttgtaa tatcaattcc ttagattatc tactatctaa attagaagaa ggaacactat 600
 gtactgactt aactacttta aagaagatga ttgaagatta caacg 645

<210> 678
 <211> 703
 <212> DNA
 <213> Streptococcus pyogenes

50

<400> 678
 gatagtagct gaaagtgaga ataaagtact aattaatatt gaatctaaat atagaaatac 60
 55 cttttttgat aaatctctga gtcattggtgt gccatcatta atcttaattg atagttcact 120

EP 1 770 171 A1

	atataaagtg acaaaagatg agagatatct aacattctcc aacatatacg ttgagaaatt	180
5	agtagacata atctctagag atggatataga atctccgtct ctctatgctg gcactgcagg	240
	tattgcatta gctattaaag aagcgagtat atctggaaag tattatccga aattattatc	300
	atccttaaatt tgtcttctaa aagaacaaat taaagacaaa ttggtagtaa gtttttctaa	360
10	tattgagaaa ggaattattg agccatatga ttatgatatg gttaacggat ttagtggaat	420
	aactaattac ttactccttg aacaagaatt tttttctgta gagttaaatc aaattggaaa	480
	ttatcttttg aaatatattg agacaatttt aaataaggta actaattggt ctgaagatag	540
15	agaagctgaa ttgatctag gaattgcaca tggaattact ggctctatgc taatcctagc	600
	aaaattaaaa tcagaaaaaa ttttgagtgt agaagtagga gatatactga ataaagctat	660
	aaatttaatg tttttattta gaagggatga caaactatgg cct	703
20	<210> 679 <211> 593 <212> DNA <213> Streptococcus pyogenes	
25	<400> 679 ttaactgagg aaacaacagt aaatcagtgg ggagttatth ggattaatgt tattattgct	
	gtaaaattctg gtttggttaa taaattagaa ttagattcta ataagtattc tgttttttta	120
30	tcaagggatg ttgatttaaa aaaggtagaa tatgccagag ttctattgat agctcttata	180
	aatctaataa ttagtatgat tttaagctta atgcttattg taattagttt tgtcctacct	240
	actccaagtc ttattagtat aggtaggata ctattaacta tcttggttaat ttgggttgact	300
35	acactatggc aaatcccggt tatttttatgg ctatcaagaa aaattaatgt gtattttgct	360
	atgattatta atattatata tccactaatt attggtacaa gtttttctct cttaaataaa	420
	tggtatttgt tcccttatga ttggtcgttg aagttgcttg agccaatgac aagaatgaga	480
40	ataaatagta taccttttgg agcggagttt gttccagact actcacagat ttttatatca	540
	ttgttctag gaattgcttt tttcatctta ctgaaccaatc tatttgctat ctc	593
45	<210> 680 <211> 544 <212> DNA <213> Streptococcus pyogenes	
50	<400> 680 taatcgggtcc aaatgggtgct ggaaaatcaa ctattatgaa aattttgaca ggcttagtta	
	gtaagacaag tggttctatt atttttgaag gtagagaatg gtcacgtcgg gatctgcgaa	120
	aaatcggggag tattattgaa gaaccaccac tttataaaaa tttgagtgtc tacgataata	180
55	tgaaggtagt tacaacaatg cttgggtgttt cagaaagcac tatacttcca ttattaaata	240

EP 1 770 171 A1

	aagttggtct aggaaatatt gacaagagac cagtaaaaca attttctctt ggaatgaagc	300
	aacggttagg tatagctatc tctttaataa attcacctaa actacttata ttagacgaac	360
5	ctactaatgg cttggacca attggaattc aagaattaag ggaaattata gagtcattta	420
	aatcagaagg aatgacaatt atgatttcaa gccatatact gtcagaagtt gaacatctag	480
	ctgattttat tggatttatc tatgaaggaa agattattct ggaaaaagaa tatgacggct	540
10	ctga	544
	<210> 681	
	<211> 548	
15	<212> DNA	
	<213> Streptococcus pyogenes	
	<400> 681	
	ggaggtttac aaagcaggac tgtattatc tctactttc aaatagtagg tgtacttctt	60
20	ccttttggtg caagtattgt gtgcattcaa ctaaaaaatt tagaagaatc atctggaaaa	120
	tataaatatt tattgggtta ctcacagtcg aattataaac catttattgt agaattagta	180
	tttctatggg tatgctattg tatagtatta attatttcaa ttaactatatt tattctttta	240
25	ttgaaaacta ttggtataaa tgtatctctc agactactta ttttgaatag ttttaatttat	300
	atcatttttg cctatgtaac ctatctgac aatcatatta ttagctatat atttagtaca	360
	gggtggtcat taggtatttc aatggtaggt gttattgctg cagcattttg tgaaacgagc	420
30	cttggtgata aggtatggtt tcttattcca tgggcatggc ttttaagaat atcagatact	480
	ctatataacc aacagaaaat ggcaattggt ccacttattg ttatatatttt tgtttcatgc	540
35	acagtagc	548
	<210> 682	
	<211> 311	
	<212> DNA	
40	<213> Streptococcus pyogenes	
	<400> 682	
	aattagattt gaccattaca gagttgcagg accatattgc tcatctcaat aagggttcgg	60
	aggtcttgct taatctgaac aacaacgata tagagaaccg ccgtttggcc agatatgact	120
45	atgccaagat gaacttgact gcagctataa aaatagaaga agttgagaaa gagattgaaa	180
	cttctcaaaa tgaacttaat atatccatag atgagtatga atatctagta agaaggttgg	240
	aaaagtttgg agagatcttg agtgatagca aaattatcga tacttctcga aatgaaatac	300
50	aatgggagta a	311
	<210> 683	
	<211> 521	
55	<212> DNA	
	<213> Streptococcus pyogenes	

EP 1 770 171 A1

<400> 683
 gtcggttgaag ttgtcttttg agtttgtatc actgttttaa tgattgcat aatatacgtt 60
 5 tctttttcaa agttaaatat agtgacatct cataatgttg gagaagaatt ttatattaaa 120
 gataaacagt caatcaaaca gttgaacaat tatatgaaga cattgggatt agattatgtt 180
 gtttttgata gaaaaacaga taaagctatg gaaggaaaat atttatctaa agaattttct 240
 10 ttatttaacg aagttgcaga agaaaaaaat aatctgactt ttaattctgt acattatgat 300
 ttatatacta atatcaatta taatattgtc ataagatata atgagatacc ggagttttct 360
 aaccattacc ttagaaatgt ttcataatac atgttgacat tttatattct gggaatagga 420
 15 acgagtatca gcattgtagt tgctttaaca cggtttgtaa aagaaatttc tttgaatttc 480
 aaggaaatca agaagttagc aaataaaatg gggatagaag t 521

 20 <210> 684
 <211> 548
 <212> DNA
 <213> Streptococcus pyogenes

 25 <400> 684
 cttatgaaga ctgcttttga gattgaaaat tatcatgtta taacctgtca agagatagaa 60
 ttaccaatag tttttgatga ttttaaagga tatgatttga tcttatttga tatcatgatg 120
 cctaataata gtggaactga gttttgttat aaaattcggg aagaagttca ttctccaatt 180
 30 atttttgtta gcgctttaga tggcgataat gaaattgtcc aagcttttaa tataggggga 240
 gacgatttta ttgtgaaacc atttagctta aaacaattcg tagctaaagt taactctcat 300
 ttgaagagag aagagagagc aaagataaag aatgaggctg aggagagagt gaagcgagt 360
 35 tttccacctt tagaaatcta tctagaggaa cgtatgttat atattgataa acagccgtta 420
 ttctgactt atagagagta cgaaatttta gaattactgt cactgcatcc gtataaagtt 480
 ttcacaaaag aagagatata tgaacaagta tatagcgatg aagcttcagc attgtttcat 540
 40 tctatttc 548

 45 <210> 685
 <211> 543
 <212> DNA
 <213> Streptococcus pyogenes

 50 <400> 685
 ttctccctac tgggtgttct aattgctatt agcttatttc aagggtttt accattttt 60
 agtatgctac tagttcaaaa aatgttaaac attataacga ctgatataaa aaattttcac 120
 acattgatga ttgcttttat ctcatatatt gctttaacat tattgacaat tataatagga 180
 gaagttgata gttatattga tactaaatta cagatacttc ttcactataa gatgaaccat 240
 55 ttagttatgc agaaaactgt aaagttaaca ttggctgaat ttgagacacc agaaatctat 300

EP 1 770 171 A1

gatgatataca ctgcataca aaatcaaata tcttataaac cttttcaa atataagtca 360

5 attatttctg tattatcttc gttagtatca ttaatttcct catttggtat tttattaaat 420

tggaagatat caatttttcc acttttactt atccttccta tcgtttctat atatatctac 480

ttgaaaattg gtaaaaatga atttgagata ctatataaaa ggagtagcga tgagagagca 540

10 aat 543

<210> 686
<211> 512
<212> DNA
15 <213> Streptococcus pyogenes

<400> 686
agcgatcctt atcttacttg tttttgttgc tttttacttt atccatcttg cggtagcgtga 60

20 ttaccgaaat gcacgtatta ttcggatgat gagecataaa atccgagact tgattaatgg 120

tcgtataact gatataatcg acgaaaaagc agacattgag ttaatggagc tttcagacca 180

gttaaattgac ctgtcagatg tttttcgctt gacgcataaa aatcttgccc aagaaaaaaa 240

25 tcgtttggca agtatttttg cttatatgtc agatgggtgta cttgctacag accggtctgg 300

taaaatcatt atgattaacg agacagctcg caagcaatta aatttaagta aagaagaggc 360

actaaagaaa aacattacag atttggttaga aggtgatact tcatatacct accgtgattt 420

30 ggtatccaaa acaccagtgg taactgttaa tagccgaaat gatatgggtg agtttgtctc 480

attacgcttg cgctttgcgt tgaataggag ag 512

<210> 687
35 <211> 520
<212> DNA
<213> Streptococcus viridans

<400> 687
40 acgtcctctt aacagtcaca aggggacttt tggcctgtc cttttgattg ggggcaacta 60

cccttacggg ggtgctatca tcatggctgc ccttgcttgt gtcaatagcg gagctgggtt 120

ggtgacgggt gcgaccata aggacaatat cacagctctg cacagccatt taccgaagc 180

45 tatggctttt gatatgggtt aaaaagatcg tttgtcagag caaataacag cagcagatgt 240

ggttcttatg ggaccgggct tggcagaaga tgacttggct caaacaacct ttgatgtggt 300

ttggcaggct atcgaaccaa aacagacttt gattattgat ggctctgcta taaatctatt 360

50 agccaaaaga aaaccagcta tttggccaac caagcaaata atcctaacac cccatcaaaa 420

agaatgggaa agattgtctg gactgactat tccagaacag atagaagcag caacacaaac 480

agcactagct ctttttccaa aagaaacat cctagtcgca 520

55 <210> 688

EP 1 770 171 A1

<211> 463
<212> DNA
<213> Streptococcus viridans

5 <400> 688
atcaggctgt tatgcgtctg attagacaaa aggatgaaca agttaagaaa ctgcaaagat 60
cagttatattt cagacagcct gaaagactct atgatgctta tgttcaaaaa ttggatcatt 120
10 taagaacaca ttgttgacc aagggtcggc aggtttatga tgtttatgat agcaaggaac 180
atttgcctgag acaaagattg ttgtccttta atttatcagg gtgtattcag cgctatcaag 240
cacaattaaa acaagatcag cgttttattgt taagccacat gagcagtcaa tatgatagta 300
15 aattagcccg ttttgaaaaa gcacaagatg cgcttttgtc actggatacg actcggattg 360
tggtcgctgg ctatgctatt gttcaaaaag ataatcacat tattcaatca acccaacaga 420
tcaaaaaagg agatcgcttg catcttgaaa tgaaagatgg gca 463

20 <210> 689
<211> 360
<212> DNA
<213> Streptococcus viridans

25 <400> 689
aattgtgaac cagttagaaa ccggtgaaat tcctcttgaa gaagctatta ctcaattcca 60
aaaaggaaatg gcgctttcta aagatttgca gaaaaccttg gagtctgctg aaaagacctt 120
30 ggtcaaagtc atgcaggctg atggcagtg agcagaaatg gacgagttgt gaaagataag 180
attaaatcca ttaatcaggc tattaagcat tattatgcgc aaactcatgt gtctcaggat 240
ttgattgaag cggctcttga ttctgttgat gcaggcggta aacggattcg tcctctctta 300
35 ctattggaaa tcttgcaagg ctttggtttg gtacttacag aagctcacta tcagggtggca 360

<210> 690
<211> 463
<212> DNA
40 <213> Streptococcus viridans

<400> 690
gaagaaacgt gaacgattag aattaattaa aaaaattggt ttagaaaatg aaattgaaac 60
45 acaaaaagaa ttggtcaaac ttttagagaa cgaaggctta caagcaacgc aagcgacaat 120
ttcccgatgat attaatgagg tcggtatcat taaagtacca gcttcaaata gtcgctatat 180
ttatggcctt tctaaggaaa taagcaaaaa agaagagtca acacaaaaac cagctgaaaa 240
50 agcagttaag tttatttcag atcagggtggc aggttttagag catctcattc atattgatgt 300
tggtcctgga aatagctatt tattgaaacg ttttttacta gagagatttg aaggacttat 360
ttttagcttg ctggcagatg atgacagttt gcttttgatt gttaaaaatg cttaaagatag 420
55 tgatagaatt cgtcaagaaa tcaaatcttg gatggccaat taa 463

EP 1 770 171 A1

<210> 691
 <211> 412
 <212> DNA
 <213> Streptococcus viridans

5
 <400> 691
 agatatgatt gcaacaattg aaaatTTTgc tcaagaacag gcagaatttc cggTTTataa 60
 10
 tattTTtagga gaaatccata cctatggaga attaaaagct gattctgatt cgcttgcagc 120
 tcatcttgat cagtttagatt taacagcaaa atcaccagta gttgtctttg gaggacagga 180
 atatgccatg ctggctagtt ttgttgctct gacaaaatca gggcatgcct atattcctat 240
 15
 tgatcatcat tcagccttag aacgtattga ggctatttta gaggtagcag agccaagttt 300
 agttattgct gttgatgatt tcccaattga caatcttcaa gtcccagtaa ttcagtatag 360
 tcaattagaa gagatTTTta aacaaaagct atcttatcaa atcaatcatg cg 412

20
 <210> 692
 <211> 560
 <212> DNA
 <213> Streptococcus viridans

25
 <400> 692
 gtgaaaagtc gcatcaaate tttgccttgt ttttctatat catttggaat attttctgtg 60
 tctatagtta taaatTTTat agaaaatcac gggataataa gtggatTTTt tatcttcatg 120
 30
 tcttcatgtc tatcttacct ttatctttgg taaagattac tcttgcgatt tggacaaatc 180
 aacaatcttt atttggtttt ttgggtatat cctatcttac ctttcgttca gtaggtatga 240
 ttatggaaat gcgagacggg gttctcacgt catttacatt ttgggaattt atccgtTTTa 300
 35
 tgctgtttat gccactTTTt tcaagtgggc ccattgatcg tttcagaaga tttaatgatg 360
 attatgagaa gattcctgat aaagatgaat tgctagatat gttggaacaa tctgttcaact 420
 atatcatgct tggTTTTTtc tataagTTTg ttttagcgca aatattggga acaatgattt 480
 40
 taccgggTTTt gaaagaaatg gccttgcaaa aagggtggtg gttcaattgg ccgactTTtag 540
 gagtcatgta tgtttatggc 560

45
 <210> 693
 <211> 250
 <212> DNA
 <213> Streptococcus viridans

50
 <400> 693
 cagctgttgc agaagattta gccaaaattg caggtgttga cttgcaggaa tatggTTTtg 60
 ctatgcttaa ggctggtacc aatttagcaa gtaaaacggc tgcacaactt gttgatattg 120
 atgctaaaaac atttgaactt aatggtagtc aagtacgtgt agctcaagtc aatacggttg 180
 55
 atatcaatga agTTTTggaa cgtcaaaatg aaattgaaga agccattaaa gcatcacaag 240

EP 1 770 171 A1

	cagctaattgg	250
5	<210> 694 <211> 508 <212> DNA <213> Streptococcus viridans	
10	<400> 694 ttctctttaa tcaaacagga agtatagcgg atcggttatgc agctaaacgt ttattagaca 60 ttaaaccogag ttcgaatttg caaggatatga taaaaaaaaat tggggctggt aaaaccttaa 120 atagctttga tagggcaagc ctgcgcctta ttaagagttt cttgaaaaaa gaagacgctt 180 tatttggaag tctgaccttt agtgataatt atgaacgtcg tgtattgccg catgtcaaaa 240 aattgccccaa gcacttttct tatggaacct taagtcaa at tgctagcaaa aatgggtcaaa 300 ggtaacaaa aacaaatcaa tttgaaatta atgatcattt ttataataaa cgtattaaag 360 gacaattgaa aagactcaaa ggcttccaaa agcaactgtc ttattttacag tctccagaat 420 acaatgattt acagctggcg ttaactcaat tagcaaagtc aaagaccttt gtcataatttg 480 ttattccgcc ggtaatgcc aaatgggt 508	
25	<210> 695 <211> 300 <212> DNA <213> Streptococcus viridans	
30	<400> 695 aattgttctc ttattggctt tctttggttt tcaacaaggt gttgatgcgc aaagcaaata 60 ccactatagt caagaactaa attactataa tggtaatgcc atggaacttc gtaatggttc 120 taatgggtgg atgtttaact gtaattttgt ccttggaat gtccggcttta ataacggctt 180 gatgagtctt aaaattgaca gtgatggctg tggcggctac actgggggag aatggcgtag 240 taaagaacgc tttggctatg gtcttttcca agtaaacatg aaacctatta aaaatccagg 300	
40	<210> 696 <211> 266 <212> DNA <213> Streptococcus viridans	
45	<400> 696 gtcttggcgc gagttttaaa ccaattcaat gttttcttga tgggtgtagct cgtgtttttg 60 gtactgacgg tcagttctcc atcttcaatg ctacgggcca caatgtctgg catcttaagg 120 acaatgcttc tatctgctaa agtcagtgtt aacagttcca tacctttctt ttctgtcgta 180 gctgtttcat ctattgtaga taagtgttgt attttcttaa ctttagccaa agctttatcc 240 acacgcccct gctcaaaagg cttcaa 266	
55	<210> 697	

EP 1 770 171 A1

<211> 400
<212> DNA
<213> Streptococcus viridans

5 <400> 697
cattggttcg atcagtcaga ccaacggcat caaaattagt atgctgctta atgatattac 60
acacttttagt agctgattgc tgactcagtc cctgtcttaa ataaggaagg gtttgctgcg 120
10 tcaaatactaa aacatcccga gtctgaacag ctctcagctg tctttcattg gataagtagg 180
tcttgagaat agctagaaat aaggctgaac ctagactggt aagcaacatc ataggaatga 240
aaatcagttt aaccaaattc cagccagtaa agaaaccgac aaagagcatt tgaatacttt 300
15 cagcaataat gctgataaca atgacctgag aagtagatgg ataaagggtta ttagtttttta 360
attgatcacc cagtcgacca ctaatatatc ctaccaaagc 400

20 <210> 698
<211> 381
<212> DNA
<213> Streptococcus viridans
25 <400> 698
tgattaaagg agttaagttg gtgaattgac ctgaaaaaat tgtttcaagt cccttaaatt 60
tcgttacatt taagttgtca aattccaagg caattttaga ataattcgtt ttaggcaata 120
aggctttaat tttttccaaa ggattttcaa aatcaagata gccagtcacc gaaatatcta 180
30 atatactttt tgctcttaaa gcatcaagtt caggtaaaaa aagcagagtt tcttgatctg 240
caaagaggaa gaggaacata aggcgttcat gcggatcact ataaaaacct gttaaataat 300
taatggagac aggatctgaa aggacagcag cttcaatacc ttgctttttg agtttttgaa 360
35 caatctgtgc taattttgac a 381

40 <210> 699
<211> 505
<212> DNA
<213> Streptococcus viridans
45 <400> 699
agaaaaagtt gactacgaaa aagtaacagg acttggttaat tctacagaat cttttgggtc 60
tgtagacgga cctgggtatac gctttgttgt ttttatgcaa ggggtgcaaa tgcgttgtca 120
atattgccac aatcctgata cttgggcaat gaagaatgat agagcaacag aaaggactgc 180
aggagatgtc tttaaagaag ctttacgttt taaagatttt tggggagata caggaggtat 240
50 tactgtttct ggtggtgaag caacgctcca gatggatttt ttaattgcc ctttttcttt 300
agcaaaagaa aagggaattc atacgacctt ggatacctgt gctctgactt ttagaaacac 360
acaaaaatat cttgaaaaat atgaaaagtt aatggctgtc actgatttag tattgttaga 420
55 tattaaagag attaactctg accaacataa aattgtcact ggcatagca ataaaactat 480

EP 1 770 171 A1

	tttagcttgt ggcggttatt tatct	505
5	<210> 700 <211> 407 <212> DNA <213> Streptococcus viridans	
10	<400> 700 tgatgctgag tacaaggatt tatccaataa tctcagcgaa tcttactata ttttagaaga	60
	tgtagcaaaa cgtctagaga ctatactgga tcatatggat tttgatgcca atactttggt	120
	taaacttgaa gcacgtcttg atgttatcaa caccatcacg cgtaagtatg gtgggttcagt	180
15	tgatgatgtt ttggcttatt ttgacaatat cagtaaggaa tacaatcatt tgacggtaaa	240
	tgacctcgct tttgatgata tggaaagaga actaaaagtt ttggagcgct cactattaga	300
	agcagcagct caattgagtc aaaaacgcca tgccattgcg gaaaccttgt ctcaggagat	360
20	taagcaggaa ctaaaagatc tctacatgga taaggctgat ttttaaag	407
25	<210> 701 <211> 250 <212> DNA <213> Streptococcus viridans	
	<400> 701 cggcagacaa gtcagtcatt actcagcctg ctacaaccct gacagctatt aaaaagattt	60
30	tagagagatt agaaattggc ggtcgtttgg caattatggt atattatggt catgagggtg	120
	gcgataagga aaaatatgcg gttctgaact ttgttaaaga gctagatcaa cagcatttta	180
	cagtcatgct ttatcaaccc ttaaatcaaa taaatacccc accctttttg gtgatgatag	240
35	agaaattata	250
40	<210> 702 <211> 213 <212> DNA <213> Streptococcus viridans	
	<400> 702 gtgatattat ccaaaccatt ctcaatgaaa gatttttcgcg gattcctggt tacgatgatg	60
45	ataaagataa gattattgga atcattcata ctaaaaattt attgaatgct ggtttcaagg	120
	aaggttttga tcacatcaat cttcgccgta ttttgcaaga gcgcttttt gtaccagaaa	180
	ctattgttgt aaatgacctt ttgaccgctt taa	213
50	<210> 703 <211> 615 <212> DNA <213> Streptococcus viridans	
55	<400> 703 attggacttg tgcagcttc gatttcaagc ctattttttg tgtccattgc gagcagtggg	60

EP 1 770 171 A1

	atcgtatattg ctcaagaaaa tgcagctggt cactacaaat atgtgacgga tacagagcta	120
5	agtagtcaag agaaggactt gattgtaaag ggcattccta aaattacgga agatagttag	180
	agcacctatt atctagtcta ccgtatggat gagaaagctc agctgggtca gttgcccaat	240
	acaggtgggc agaatagcct tactagtgtt ttaactgggtg gagtcctagc ttcgattggc	300
10	cttcttattt ttgtcgtatc gaaaaagaaa ggcaaaaaga aagcactgtt gaaagttgtc	360
	ttgataacag gaatgggcag tggtttggct tcttcgggtc atgctatcga aaatcaactt	420
	ttgctccaat acaatcagga ataccaatta tctcaaggag atagtctgcc tttgccacgc	480
15	gccctgtcag gatataccta cctaggctat attaagcaag acaaagagat taatcagcaa	540
	gaaactgctg ctagggatca gaaatttgac tacacgggtc agcctcattt tcagaccaat	600
	gaaggtagac aaagg	615
20	<210> 704 <211> 541 <212> DNA <213> Streptococcus viridans	
25	<400> 704	
	gaaggcaatg aggagactta ctatcttgtc tacagggttaa actcaaatgc tggatcaaaa	60
	accttaccga atacaggcga cagtaacaat tccaatacta tgatgacggc tggtttgtta	120
30	acgacgatag gattgggtgt ttttgttgtg tcgaaaagaa aggttaaaaag caagttccta	180
	ctgactgttt tgggtggggc tagtgctggg ggaggtttga tactatccgt caatgcgctg	240
	gaaaatggga tcttctaca gtataatgcg gaatatcaag tgtcgggtgg ggaaagtctg	300
35	ccgtcaccaa gtgaaatttc aggtatatac tatgttggct acattaaaga agaatcgatt	360
	cagaaattat tagacaataa gattcttaac aatcagcaaa atgctaattc agataaagaa	420
	actttaaac aaataaagaa gctagattat tctctttctt ttgataagaa tgggctgaaa	480
40	aatcaaacgc ttggcgtcaa tacaattgag cctcaagatg aagtcttgtc tggccgagta	540
	g	541
45	<210> 705 <211> 563 <212> DNA <213> Streptococcus viridans	
50	<400> 705	
	ttttattggg aggttttctt tattatatta ctaatcctat tgtcactttt ttagaaaacc	60
	gttttaaaat taagcgtatt tgggggatca ctcttatttt tgetgtattg ctttccttgc	120
	tggttttttc tattaccagt ctgattccca atttgattaa tcagctaaca gatcttattt	180
55	cagccagcca aaatatttat gtgggtttgc aggatttatt caatgaatgg aaaagcaatc	240

EP 1 770 171 A1

	ctgcctttaa aaatattgat atccctgttc ttttaaaaca gttcaattta tottatgttg	300
	atattttgac aaatgttttg gatagcgtga cagttagtgt ctcaagtatt gtttatatga	360
5	ttacaaatac ggtgatgatt ctggttctta caccogttat tcttttttat ctectcaagg	420
	acaaagatgg tttaatgccc atgttagatc gtactatatt gaaaaatgat aggcataata	480
	tcagtcaatt actgaatcaa atgaacaaaa ccatttctcg ttatattagt ggtgtagcta	540
10	ttgatgctgc cttcatattt gtt	563
	<210> 706	
	<211> 500	
15	<212> DNA	
	<213> Proteus mirabilis	
	<400> 706	
	tgaaaaagtt attattatct gcaattatta cttcagcaat ggccataatt gctacacctg	60
20	ccctagcaga agatactggg acaccagcac caacagaagt tacagttaat ggtgggtacta	120
	ttaactttga aggttctgtc gttaatgctg cttgtgggtg tgatagtagt tcaagtaacc	180
	aaactgttcg tttgggtcaa ttccgtgtcg ctgaattcac taaaaaagggt gatgaaacag	240
25	gacgtattcc ttttagcatt aaattaaata actgcgatat tactgtttca tcattagcag	300
	caattacctt taacggtaca gcttctgatg gtgatgcaac tgcattcgca ttacaaggca	360
	gtggcgcgac aaccaatgta gcgttaaaaa ttaccgattc aagcagcaaa aatgttggtc	420
30	caggacaacc ttcttcaact caaaaattaa tcgaagggtga aaaccaatta aattataacg	480
	cttctcttat ttccactgat	500
35	<210> 707	
	<211> 346	
	<212> DNA	
	<213> Proteus mirabilis	
	<400> 707	
40	agatgaaaag cttgctaatag aaaatacaact acaaattgcc atccagagtc ggataaagct	60
	tttctacogt cctagtggat tgtccgctta tactgaaaaa tatgccaatg aagtgacttt	120
	ttcctataaa aatggggagt taattgcccc taatccaaca cttatcata ttactatggt	180
45	caatttagct gcagccgaca gtcaacttcc ttcaagtatt atgattaacc cattttcaca	240
	attaacatta ggaaaagtta atcagaatgc taataccatt tcattccaaa ccattaatga	300
	ttatggcgca cagactcctg ttttaaaaaa agaaatcggt cattaa	346
50		
	<210> 708	
	<211> 563	
	<212> DNA	
55	<213> Proteus mirabilis	
	<400> 708	

EP 1 770 171 A1

	tggtgactc tcctgatgcc gtcaccgatt taagttatTT tgaagcaggc aaccgcatta	60
	aaccCGgtga ttatcttctt gatattgttt ttaatcatga gtatctgcgt agtgaaaata	120
5	ttcatTTTT tagtcaagat aaccatgtta ttcttTgttt aaatcgagat tattatcaat	180
	cactcgggat caatattaaa ctatttgctg atTTtgagaa attctcggca aatgaatgta	240
	ttgatattga aaaaatcatt ccagattctg ttgttaatta tgatattgag aaacaagctt	300
10	taaatattca agtccctcaa gccgcgttag atTTgaaagc acgcggttat attccaccag	360
	aaaaatggga taacggtata acagcaggta tTTtaaacta cacctttagt ggogctaata	420
	gctggggaaa ttctcataat aatagctact acttaaactc acgtagtggg atcaatattg	480
15	gtgcttggcg attacgcgat tattccactt ggaattcgtc aaacgggaaa aaccaatgga	540
	accatatcaa tacctatctg caa	563
20	<210> 709 <211> 527 <212> DNA <213> Proteus mirabilis	
25	<400> 709 atggataata agcgaacaca gcgggatatt atatttagca taatatggat tatttggTca	60
	tgtgcattaa tggctTTTT gcgatatcaa atagctggTg agcttttgat cacccttatc	120
	ctaattTTta gcattattat ttactctata actttgaggt taaaaaaaaac ggcaatgttt	180
30	agtcgaaaaa cagaaacacc aaaagccgcg gagectattg ctccagttat ggcagaagag	240
	aagaagccta tgccggagca aaaattgtat accattattg ctaaaggcac tgtatttcaa	300
	ggtgatatta acgttgatgg tgatattcaa atttggggta aaatttcagg gaatatcaat	360
35	gtaaaagatg gcgtgatccg tgttatgcat gcaggccaag ttgaagggga attgacggcg	420
	ccagacatca ttattgatgg ttttgTTaaa ggtatttgTg ccgcaaacia tottgatatt	480
40	ctagagcatg gtgaactacg tggcactagt cgttgtggca gtatgtc	527
45	<210> 710 <211> 431 <212> DNA <213> Proteus mirabilis	
	<400> 710 ttatattgaa aactgaagc aacggctgga tgcgattaat caactcaggc tggaacgtgc	60
	atttgcacTg atgagtgatg tgtTTaaaca ggtgtatggT ttaattcctg ttttactgca	120
50	ttaccaccac cctcagttgc caggctatat tcaaggaaat gtccctcatg gtacatgttt	180
	ctttgaacct gatgacgtgc aacgtcaatg ggTTaataag ctgactaatg catcatgtga	240
	tgagccaatg aatggataca ccagcggaga gttacctatt acgggtatct attcgatggg	300
55	aagtacttcc tcgattgggc aaagtcactg ctccgatatt gatatttggg totgtcacca	360

EP 1 770 171 A1

	atcttggtcg gaccaagatg agcgtgcgcg tttacaacgt aaatgtttac tgatagaaca	420
5	atgggcagga g	431
	<210> 711	
	<211> 528	
	<212> DNA	
10	<213> Proteus mirabilis	
	<400> 711	
	cgctattaac cttgctgaac gtggtatgag tgtcactatc ttagaaaagg gtcagattgc	60
	cggtagacaa tcaggccgtg catacagcca aattattagt taccaaacad cgccagaaat	120
15	cttcccatca caccattatg ggaaaatatt atggcgtggc atgaatgaga aaattggtgc	180
	ggataccagt tatcgtactc aaggctcgtgt agaagcgtg gcagatgaaa aagcattaga	240
	taaagctcaa gcgtggatca aaacagctaa agaagcggca ggttttgata caccattaaa	300
20	tactcgcctc attaaagggtg aagagctatc aaatcgctta gtcgggtgctc aaacgccatg	360
	gactgttgct gcatttgaag aagattcagg ctctgttgat cctgaaacag gcacacctgc	420
	actcgtcgt tatgccaaac aaatcgggtgt gaaaatttat accaactgtg cagtaagagg	480
25	tattgaaact gcgggtggta aaatctctga tgtggtgagt gagaaagg	528
	<210> 712	
	<211> 409	
	<212> DNA	
30	<213> Proteus mirabilis	
	<400> 712	
	ttgttgcaat acagccatca tgcttttaac ttgagagtta ataatgtca catctgccag	60
35	atatttaacg ctattatcgg gtacgtacaa attactccgt tccatatcca tatcgaccgt	120
	gttaccatcc atcgatgttt gatgaggaac ccgataaagc aaatcagcct ctaagcgata	180
	acccggttta ataggaatat gccgttctga tgtcattgtt agttgcaatc catgactacc	240
40	agtacgcccg ttttccatgg tttttttcaa ctacagctgcg aaatcaatat cccgagcttg	300
	gaagcctggc gtatcagcat tagcaatatt tgccgcaaaa atttcttggc gtttattacg	360
45	tagtgaaagc gcttcttgtt gaaaatgaaa cgtattttgt aatttatcg	409
	<210> 713	
	<211> 513	
	<212> DNA	
50	<213> Proteus mirabilis	
	<400> 713	
	aactttagcc ccactactat cagtaatat gactgtaagc gtatctattg gactaaagga	60
	ttcaaaacca aaggcgtg cgagatatt ttcattatca ggatctggcg tatcagcaga	120
55	tcttaataac ggatctaatt tagtatcagg cgttttatct gtatcgatat ctgtatctgc	180

EP 1 770 171 A1

	atcagatcca gcgttttcac cattattact cttatcaacg tagatatcat taccggcaat	240
5	catcaccata tgattaacca atgaggctgc acgtaatgcc tgactttggc caatttggcc	300
	aacaatagta ttgactgttt tatttagcgt ctctatccct tcaaccgtag aaatctgtgc	360
	taactgtgac gttaactcat tattctgcat tggattgggt ggatcttggc tttgcatctg	420
10	cgtgataagc aacgtcagga aattaccttt aatatcatca cccccccctt ttttagtgtg	480
	gtaggacgaa ggcgcttccc cgataatggc att	513
15	<210> 714 <211> 404 <212> DNA <213> Proteus mirabilis	
20	<400> 714 actccgccag accttagatc ttcagttatc acagctcaat accattgcgc gtattttacg	60
	tgctgagcaa cagttattat gtgcaggaag tattgatatc aataagctgc atgaaataac	120
	tgaacagaag aattttgtat taacagctct aggtcatacc gatcaaaaac gtcaaatact	180
25	cagtaaaciaa gttgggtattg atagacccta tcaaggacag ctttttttag ctgatttatg	240
	ggggcaactg gttgatctaa cggaagagtt aaaacatctt aatcaacata atggcttatt	300
	gttagagcaa catattactc gcaatagtga aacgctgcat tttctacaga aaaatcatag	360
30	cccaacactt tatgggtgcag atggacaagc acagcggtca atat	404
35	<210> 715 <211> 236 <212> DNA <213> Proteus mirabilis	
40	<400> 715 gcgattctat ggctgatgca ctaaaagagc taacattgcc tcaattgggt aagttggctg	60
	aaacaaacca actaatctgt aatttccggt ttgaagacag cgaaacaata gaacaactca	120
	ctaaagaatc cagagtggat gatttgcaac aaattcatac tggatccctt ctttcttcta	180
	acttgttccg tcaactatcg gaacatgata cctctgctac aaagaaacgg gcataa	236
45	<210> 716 <211> 633 <212> DNA <213> Proteus mirabilis	
50	<400> 716 tctaattctta attcctctgt tcctattaac aagtttttac cttcaatatc aactttatca	60
	tcatttaatt gtaataatac atgaccatgc cctggattt taccaccaag agatatacta	120
55	tcatcagcga caatatgaaa aacactatta tacgacaatg atatattggt tatttctagg	180
	gttcctactc ttccatataa ataactatca tcaatattaa atgttctatc taaaatcaac	240

EP 1 770 171 A1

	gtatccgctt tcacaaatag aatactatct ttaacattaa atgatgattc attaataataa	300
5	gaagaatatt cataaaccat tacttttgat tgtttcgtcc catcatgagc tgttctatat	360
	aaattatcat cttgatttat atctatgtgt cctgtgttaa ttaagccata agactcatga	420
	tttagtgaca aagtatttat attaccatca ttataaacgt taccctcttt tgcttttatt	480
10	attaaaatgc gactatttat tcctgcctcg gcatttaatg aaaatagagc atttctatca	540
	taatcatttt tagctocaag attaaactca cttaaccca tatcaaaacg aatatattca	600
	gcattttaat cacctttaat caagtctata tca	633
15	<210> 717 <211> 628 <212> DNA <213> Proteus mirabilis	
20	<400> 717	
	tctttactga gcttccatcc agccgatccg agttgggtcac aaaccacgtg gaatgaacct	60
	attcaaaact taggtggcaa tattggtgca tggcttgctg atatcctttt ttcagcattt	120
25	ggcttgctcg cttatgcaat ccctattgtg gtgggtatttg gttgctggaa tgcattacgt	180
	catcaaaaaa atcgtgaata cacagatttt ttctcccttg cattacgtac aattggtgcc	240
	ttggctcttg ttcttacatc ttgtgcgtta gctgatctta attttgatga tatctacaat	300
30	tttagctctg gtgggtgat tggtagctta tttagcaagg cattgctacc ttgggtttaat	360
	atgctaggtg caaactggc gctactatcg gtatgggcga taggctttac gctatttact	420
	ggctgggtcat ggctgacgat taccgaaaag attggtgcgg ttatcttagg tgcgggttgc	480
35	tttattacta atcgtggtca aaaagatatt gattatgatg attatgaaga acccgccgat	540
	cctgctcagg cagatccga ggcgttggtc gataacaaca ccagccaga acatcaactt	600
	tctgcgcaaa tagagccaga tagtgatg	628
40	<210> 718 <211> 501 <212> DNA <213> Proteus mirabilis	
45	<400> 718	
	tattgagcgc attgatttac gcaccaaaaa aacagagtca gggaaagatt ttcttgccat	60
	caaccctaaa gggcaagttc cggttcttca attagataat ggtgatattt taacggaggg	120
50	tgttgctatt gtgcagtatc ttgccgatct gaagccagat agaaatctta ttgccccacc	180
	aaaagcatta gaacgttatc atcaaatga gtggctaaac tttcttgcca gtgaagttca	240
	taaaggctac agccctctat ttcatctga tacgcctgaa agttatctcc ctgtggtaaa	300
55	aaacaaacta aaaagtaaatt ttgtttatat taatgatgta ctaagcaaac aaaaatgtgt	360

EP 1 770 171 A1

	ttgtggtgat cactttactg tggcggatgc gtatctgttt acgttaagtc aatgggcacc	420
	tcatgtggcg ctagatttaa ccgacttaag ccatttacia gactatctag cacgtattgc	480
5	acaacgtcct aatgtgcata g	501
	<210> 719	
	<211> 301	
10	<212> DNA	
	<213> Proteus mirabilis	
	<400> 719	
	tcatatcgct gtattacctt gatatacagc ggttaaaatc tctctagctc ctttatctag	60
15	tagctcttcg gcaagagaaa taccagcttg ctctgcatct tcaggtgata ctaagcgttc	120
	gccacgtaaa atagttttac catcaggggc gccaaactaat gctcgtagcc aaattttgtc	180
	gttttgccaa attgcataac taccaatagg tacttggcac cccccctcaa ggcgagtgtt	240
20	catcgcacgt tctgctttta cacaagttgc agtatctgcg tggttaaggg cggctaataa	300
	g	301
	<210> 720	
25	<211> 507	
	<212> DNA	
	<213> Proteus mirabilis	
	<400> 720	
30	agcgcaaaact cttcagatac ataatacaata aatagacgct gataacattc acattcatca	60
	acaattgcac cgcgttgacg taatgttgtg gcaagtagtt cgcgaccacc attgcctctt	120
	agtagtagta ctgcgttggt ttctatttgt tgaagtgaag acaaggccag taggtcttca	180
35	ctggtttctc caaattcttg ataacgtata gaatgtgctg ttaattgctg aaactcttcg	240
	gcgggtgcttt gacctattcc ataatagaat agcgtatctg gccacgattg ttgtaattga	300
	tttagttgcc agtttgcgta ccacaccgca tttttagaaa gtaaaaaaag gtaatcacc	360
40	gtacttagct tatttaattt gttttctaata atggaaagct ctttaccgcg ggctatttct	420
	attaaagggtg catgaaaagc atgctttccc gcatcaatta agcgttgctg aagttgttct	480
	cctgctgggc taggacgagt gattaaa	507
45		
	<210> 721	
	<211> 402	
	<212> DNA	
	<213> Proteus mirabilis	
50	<400> 721	
	aatattgggtc aagctgcaaa aaatccggtg ttttcaagta aaatgatccg atattatgag	60
	caaattgggtt taatacctaa ggcaattcgt actgacggag gttatcgtga ttacaatgat	120
55	agcgatgtag attgttttcg ctttatcagc cattcacgtg ctcttggttt ttcaacagag	180

EP 1 770 171 A1

	caaatatcaa cattattagt tttatggaat aacagagaac ggacaagtgc tgatgtaaaa	240
	gctattgctc tttctcatat cgatgaatta aaccgtaaaa taacgcaatt gcaacgaatg	300
5	acgcaaacat tatcgcattht agcacaagag tgccaagggtg ataataatcc tgattgcccc	360
	attattgcta agctagtcga accccaaaaca gggacagaac at	402
10	<210> 722 <211> 300 <212> DNA <213> Proteus mirabilis	
15	<400> 722 aaatagtggg ggtgtgttcc aagagcaacc tgactttaaa gagccaccac tttctattga	60
	agggtgcagcc gatcactgga accatcgtga agatgaagat tatttcagcc aacctcgtgc	120
	actgtatgag ctattaagcg atgacgagca tcaacgtatg tttgcgcgta ttgcggggcga	180
20	attatcacaa gcaagtaaag aaacacaaca acgccaatc gacttattta ccaaagttca	240
	tcctgaatat ggcgctggtg ttgaaaaagc gattaaagtg ttagaaggga aagacgctaa	300
25	<210> 723 <211> 220 <212> DNA <213> Proteus mirabilis	
30	<400> 723 atgaaagcaa aaattgtact aggtgcggta attctggcctt caggcctatt agcaggttgt	60
	tcttctagca acaacgcaca attagaccaa atctcttctg atgtaaaccg tttaaatacg	120
	caagttcaac aactaagtag tgatgttcaa tcagctaacg ctcaagcaaa agccgcttat	180
35	gaagcagctc gtgctaatac gcgtctagat aaccaagtaa	220
40	<210> 724 <211> 521 <212> DNA <213> Proteus mirabilis	
45	<400> 724 tgcaattggt tacgagagat tttgatccct ccattcttta gctgttctgg taatagtaaa	60
	caagcgatgg gacgttgaaa gcctgctaaa cgcgtatgat accattgtgg taattgatta	120
	attgtctcaa tatcagtatc aacaacagca acgggacggt gaccaaattc aatatcgtca	180
	atcgggacaa taaatgtttg gcgaacatta ggggtgactat ttagcacctt ttcaatatct	240
50	tctggctgta taccttcacc cgcactaaaa aacagattat ctaatcgccc taaaatgcac	300
	cattctctct ctttaaaaca acctctatcc cgtgttgcat accaagcatc ctgagtctgt	360
	gataacggct ttaattgacc atcaaaccac tatcctaatt caacactatc agatttgatc	420
55	tggaatttcat tatccactaa tctgaccgct ttacccttta atggcgtaac aactcccgct	480

EP 1 770 171 A1

ttaccatctg cgcgttttgc acaaacagta gaggccattt c 521

5 <210> 725
<211> 273
<212> DNA
<213> Proteus mirabilis

10 <400> 725
cagacaatgc gtttattttg tgttcactaa aagcgggtgag catatcgtcg ataaaagtga 60
gtcgtttttc tcgatcgggtt aggggtgatca taaatttcaa tttggtaggg ccatcctaac 120
ggaagatgct cggttgctct tgcaataaac cgattaaata agtcgggtcg acattatattt 180
15 tttcaccaaa ctcaataaag ccacctttgt catgggcttc aatgcgagat atacctaaac 240
tcatggcgct taatcgaatc gccgcattac gta 273

20 <210> 726
<211> 769
<212> DNA
<213> Proteus mirabilis

25 <400> 726
aaacaataga tactttgcc aactaactttc gtatttttaaat aaaattagcc ccactccctc 60
tgattagtgg cattattatg gcaataatct caacaatgct aagtttagca ccattatgga 120
tcatctataa aatcagccag atttggtttt caacatcacc taatattcaa caaataaata 180
30 atctagttaa tatcactgtg attatatttaa ttttacggtg gggattaatg gcaataagtc 240
atattgcgc acatcggggt gctttttata ttcagcatca attacaactc gcaatagcta 300
aaaaaatcag taaagtacca ttatcatttt ttgctcaata tggcagtggg aatctgcgac 360
35 gtattatcaa tgatgatata aaaagcttag aagggtttttt cgcacatatg ctacctgac 420
tcgtctcagc catagtgcct ccctttatcg ctattatatt acttttttat gtaaattggc 480
ctcttgctt attatctcta accccattac ccattgcttt tatggctcaa cttctcatgt 540
40 tgcgtcgagc caataaacia accaatgagt ggatgaatat tcagaaaaaa attgctaattg 600
aaataggaga atatattaaa ggaatacagag aaataaaagc gtttaactta acotcccata 660
cttttggtaa attatctcaa tctatcaatt cctctgttaa atggataaaa aataatgtca 720
45 aagctagtag aggtcttgg atggtattta gtgggatatt aacagcgaa 769

50 <210> 727
<211> 516
<212> DNA
<213> Proteus mirabilis

55 <400> 727
cttgccgtag ttgaaggctt ttttgctact attccatata ttctactcta ttttttatta 60
attgatcttt ttgccataa aatcacacta gctcagttat tttattactt tttatcaata 120

EP 1 770 171 A1

	ctcttatcta ttgttctgcg tattgtcatt ggtacttata gtatgccaat gattttttatt	180
	ggtgcttata aaatgatggg acaagcccgt ctaagaatag ccgatcattt acgaaaaatc	240
5	ccgattggct ggttttcttc tcaacgcagt ggtgatcttg catcacggct tactgctgat	300
	ttagagatca ttcaaaatat ctggtcacat ttcttaggaa tgtttatcag tacttttagcg	360
	atgcctgttt ttctctcact attcttagta tgggtagatt ggcaactcac ttttaattata	420
10	ttattttcta ttccaatcgc tctgttcgca ttatccataa gccataaaat aatgttaaaa	480
	gctgcacaac aggcagctga tgctaatagcc aatgta	516
15	<210> 728 <211> 673 <212> DNA <213> Proteus mirabilis	
20	<400> 728 ttaagtaaag ctaaattccag aatgcacatc ttaaataacg atgaaatttc atcgttattc	60
	gactaccctt ttataaaaca acgaaatatt tttttgctat caagagtcac gttacgcgat	120
	attttatcat tttattttaa aatttcacca gaagatgtaa gatttttcaa aaatgagtac	180
25	gggaaaccat ttatttttaa cgaatcaaag gaaagcattt acttcaattt atcacattca	240
	aataattgtg ttgctctcgc tatttc aaat acatcatccg ttgggtattga tattgaatat	300
	ttcaaccgtg atatagaat aaatagcatt atagattatt atttctcaa aaaagaaaaa	360
30	aaatacctat cttattttga cgagactcaa aaaaaacata atttctataa gatgtggaca	420
	ttaaaagaag cctatatata atcaagaggc attggattat cagaagaaat cattaagaat	480
	ttagattttt atataaagag agatcaattt gataaattat attttataga acagcattac	540
35	tctgctcacc tttcatatat taccaaatac atattagata gctataaaat atccataatc	600
	acatatcacc atccatttaa ctataaatc ttaacatggg gtgatataaa aagcaacctg	660
40	ccacatcatt tat	673
45	<210> 729 <211> 682 <212> DNA <213> Proteus mirabilis	
	<400> 729 attattctcg ccagtgttcc gacagaaaac gatcactttg atcaagagtt acctagtgc	60
	accaagatac aacaaagtcc acaactacaa tggcaattaa caccttgtgt ggaacaagat	120
50	cttatcaagc caacattaat atttaaccat caacaaacat tgccttctga aatcacagct	180
	attttatccg ctattggatg tctttctgaa cagggcgaaa atcaattaat cgttgccaac	240
	cttgagatc ctttaattat cgccgagcag atccgccaaa tattactgtc atcgtctgat	300
55	gggtttgttg ttatcacgca acaagcctgg gcattaactg ccatagaaac ggtaaatcca	360

EP 1 770 171 A1

gcacaacgta gtattcgaag tttattaaaa actattcaaa aagaatatag ctcaagggtta 420

5 attgccattg ttgatttagg tataaatgcc tcatgggtctg aattagttcc tgcttttata 480

caaatagaac aaggtaataa tgaaattatt gtctgtaacc attgctgcta cttaccacaa 540

ttaaccccac tgcctcctc ttctacgac atagcgcaga acatcatggt atccccgcgc 600

10 tggcatatta ttactgggtg ttttggaggc ttaggtcgaa ttacagcaag ttgggttagta 660

aggcaagggtg ctaaacgtat cg 682

<210> 730
<211> 609
<212> DNA
<213> *Proteus mirabilis*

<400> 730

20 aatgtaaata aagacaatgc taacctattg gtttgcccat ttgctgggtgc cagtaatagt 60

gcatttaact cgtggagatc taccgatatt tcagggttaa attgtcaatt agttaattac 120

tctggccatg gttgcagatt taaagaacca gcctttaatg atattgggtt attagccaat 180

25 gaattaataa caataataaa gaaattttat ccaccacggc ataattcatt attactttgc 240

ggtcacagta tgggggcccc agttgccttt gaaactgcta ttcaattaga aaaaaatggc 300

tgggaattat ctggactaat attatcaggc tgccaagctc ctcatattca agcaaggaga 360

30 ttactgagtg atttaaataa tgatgacttt attcaacaat taattgccat tgggtgatgt 420

gatgctgaat taatcaagca gccacagttg ttaaacacagt ttatgccatt attacgtgct 480

gatttccttg ctaccgagcg ttattttttt caaaaaagca ctaaacggct ttttcatacc 540

35 cctgttttat taatgtatgg tagtcatgat agtgaagctg ataaaaacga agttgaagca 600

tggcaagat 609

<210> 731
<211> 609
<212> DNA
<213> *Proteus mirabilis*

<400> 731

45 taaagcattc ggtattccac tttttactcg atttgatcaa ctacctgaaa aaatagatct 60

agcttgtatt gttgtgcgat cagccattgt tgggtggcgaa ggtagccaac ttgcgcaagc 120

atttttaciaa cgggggatct cggttgtaca ggaacatcct gtacatcctg atgaaattac 180

50 cagactaciaa tcattagcag aaaaaatgca ttgcactat atcgtaaca gcctctatcc 240

acataataaa gcaggacgtt tatggataga aaacacacag aagatatatc agcaaataca 300

acaacgacca gtgtggggac aaattatcac aagcaggcaa ttaatttatt ccgccttaga 360

55 tatatatgac caagcaatga aattacaccc taatgatatt acagtcacat tagaaaaaga 420

EP 1 770 171 A1

	taataccccg ctacaatttc tacgactatc caaccctact ggtgatttgc ttttatgcct	480
	acaaaaacat ttgtcatcta acgatacctga tcagcatagc ctcgtgatgc atcatatgat	540
5	attaggctgg ccagctggtt atttaactct cgctggaagt tatgggccag tagaatggaa	600
	taatgcgct	609
10	<210> 732 <211> 502 <212> DNA <213> Proteus mirabilis	
15	<400> 732 aattggctac tcctcgatta cgtttacgag aatggcgtga aagtgataaa gcgccatttt	60
	ttttacatat taacgcctcc gcatcgggtga tgcgttattt cccttcacca ctactcgtg	120
	cagaaaagcga tgcaatggtt gatacattgc gtgataaatt tattcagcaa aatgggtggg	180
20	gattttgggc cgttgaatta aaagagactc aagagcttat tggctttggt ggattaaata	240
	ttcctaattgc ccctttgcct tttaatccgt gtgttgaaat aggttggcgt attgcacaat	300
	ctcattggcg caaagggtac acttatgagg cgctttaac agtattaaaa tatgcttttg	360
25	aacagttgaa actggaagaa gtcgtagcat ttaccgcagt gactaattta ccctcagaag	420
	gggtgatgaa aaaactcggg atgaagaagt ctgaatattt tatgcatcca tctctagata	480
	aaacacacccc tttagcacia ca	502
30		
35	<210> 733 <211> 511 <212> DNA <213> Proteus mirabilis	
40	<400> 733 tgcggtttta gtatttggtt ttaattctgt tgctacagct gaaaatgaaa cgctgcacc	60
	aaaagtaagt tcaactaaag gcgaaattca attaaaaggt gaaattgtta attcagcatg	120
	tggattagca gcatcttcaa gccctgtaat tgttgatttc agtgaaattc caacttctgc	180
	attagcaaat ctgcaaaaag caggaaatat caaaaaagat attgaattac aagactgtga	240
	tacaactgta gcgaaaactg ccacagttag ctatacacca agtggtgtta acgctgtaaa	300
45	taaagattta gcctcttttg tttctggtaa cgcactctggc gcagggtattg gcttaatgga	360
	tgcaggtagt aaagcagtta aatggaatac tgcaactaca ccagtacaat taattaacgg	420
	tgtatctaaa atccattcgt ttgcttatgt tcaagctgaa tcagctgacg cttaaagtaac	480
50	gccagggtgaa ttccaagcgg ttatcaactt c	511
55	<210> 734 <211> 726 <212> DNA <213> Proteus mirabilis	

EP 1 770 171 A1

<400> 734
 tttctcacaa gcagagcagg acgattctgt ggaatttaac attcatatgc tagacgcgga 60
 5 agatcgcgat aatgtcgacc ttctacgttt ttctacctca aattatatca ttccgggtat 120
 gtactattta gatattcgtc taaatggctg cgactttcct cgccaaaata ttaattatat 180
 tgaagtagca gataatcatt ccgtggcttg tatcgaccct actcttttaa aaaagttaac 240
 10 aatcaaccaa gaaaaccaa aatatatcaa acaaatatca ccagattggt ttgatattag 300
 ccaattaccc ggtatctcga ttaaaaatga tgggtggtgta cttgatatca cgttaccgcg 360
 ctcattaatg aaatatgaag aatctgattg gacacctccg gagctttggg atagcggggg 420
 15 ctctgggctt atttttgatt atacactaac aggaacgtca actcgcccta ataaaggcaa 480
 taataacaat acgttaactg gttatggtca agcgggatta aacttgggtg aatggcggtt 540
 acgagctgaa tatcaaggca attattcttc tgaatattca tctaacaatc gttttgattg 600
 20 gaaccaaatt tatgcctata agccattacc tgatctcgca gctaaattaa cggttgggga 660
 aacttattta aactctcaa tttttgatag ttccggtttt acaggagcca atttacaag 720
 cgatga 726
 25
 <210> 735
 <211> 568
 <212> DNA
 30 <213> Proteus mirabilis
 <400> 735
 atgccgtatt agatcacacc acctttccta ataacaaagc gggagaatta gcaacagtaa 60
 acttttcgtt gcctgatcgc tatgatggca cgggtatattg tcctaactca cgtatttatg 120
 35 atcgtgcatt aacctatfff aaagcaacca ctgatttacc tcctggttgt aataactfff 180
 atcaattaaa tgagtatggt gatatacaaaa ttaattttga aatttggggg octaatcctt 240
 taccacaggt gcccttttct gacataccta ataatagaaa taaccaacaa gggtgcagag 300
 40 taccctcttc acctaaaccg catatttcct caggaagtag cggtaactc actttccgtt 360
 taagaaaacc cattattaat ggtgtcagtc ttaatgggca atctcttgca caaatgtatg 420
 ccatggtaag tcacagcggg gcgcaaaaaa cctatgggtc agagccatt tctaaattag 480
 45 tgatcacctc ggggatcatt accactaaag ataaatgtat ttttaataat gggtcaccaa 540
 ttacctttga ctttggtaat gtgggaaa 568
 50
 <210> 736
 <211> 544
 <212> DNA
 <213> Proteus mirabilis
 55 <400> 736
 aacaggcaca ttaacagagg gtaaacctca agtcactgat gtcatagcta atgtaggctt 60

EP 1 770 171 A1

	taatgagaaa gagctactga tgttggtctc ttctgtagaa gttggctctc atcacccctct	120
5	tgcaaaagcc attattaata aagcacaaga gcaacaaatt gatgttggtg aagccgataa	180
	tcgcaaggct ttagcgggta aaggatttga aggttattta aataatcagc atattctggt	240
	cagtgcocca acacaattat cagaaacat accattatct gcacaatggc aacaacaagt	300
10	cgctcgctct gaagatgaag gcaaaaccgt tgtggtggtt ttaaaagaag atcagttcat	360
	tgtgtgtgatt gcgatgcaag atacattgcg caacgatgct atogaatcaa tgaaagagaa	420
	gaaagtgttg aaatcgatga atatcaatgc cgtgatgtta accggtgata acccaagagc	480
15	agcggtgctg attgcacaaa aactgggtat ggatttccgt gcaggattgc tccctgaaga	540
	taaa	544
20	<210> 737 <211> 641 <212> DNA <213> Proteus mirabilis	
25	<400> 737 gcacactgac ccaattaaag ccaatacat taactcgctt atatgctctg tttcttctgt	60
	ttatggccat atcccttttt ctatatgctt atagctatct tgatacttgg ctagaaagta	120
	aaaaaaatgc cattaacaac acgactaata agtttgcac tcaagttgaa gattaccgct	180
30	atcacgctaa ccaactattc cagttatcaa acaaaattaa tgatccaacc ctctttctgc	240
	ctttaaaaat caatccggtc aaactacgct ctgatgttta ttggcttgaa ggacgcgac	300
	agaccgttga tgctattgtt ttgggtaaat cgaatgaaca aacctttcag ttagccggtt	360
35	atthttgcaa cgcgttagaa attatthggg gggtacgtaa taactatagc tctctctatt	420
	atcttaatgg taaaggcaat gatcttatcc ttattactac cactcaata ctaaaaccag	480
	aattgcgtta taaagaaagc tatttaacac taacggctga aaacaaacgt tctgagctat	540
40	taatgcaatc aacggcatta gatgaaaaag agagcctttc tcccattagg aaaatgccga	600
	cagaaaacat ttattactat acctatcgca catgtttta t	641
45	<210> 738 <211> 699 <212> DNA <213> Proteus mirabilis	
50	<400> 738 tggttgga acacaatcat tcattcccgc atcaatacaa cgttggtttt ctccggcaat	60
	cgcatttgct gtaacgcaa taataggaat agtgctactc aattcacgca ctgttgctgc	120
	taattgatag ccattcatat ttggcatatt gacatcggtt aaaataatat cgacatgatt	180
55	ttcttgcata aaggctaaag catcacagcc atcttctgcc gttgcggtat taaaaccaat	240

EP 1 770 171 A1

	ttttttcagt tgatcgggtca acaataaacg attgataggg tgatcatcaa caatgagcac	300
	cgtaataat ttagatcgt gatctgtcat taacgcgtta ttttctgagt catcagactc	360
5	taattttggt tgggtgaatt gtaggataat cttaattaat tcatttaatt tatatgtact	420
	gcataaccaa ttattttcag agattttctt tgctgggtca aaatagtgtt cataaatacg	480
	gataaattgg caagagttat ctaaaccattc atcatgatcg gtgataataa aatcattctc	540
10	agatacctga gtcacttccg tgaataattg acaatgtaag cccacataac ttagatatcg	600
	ttcaacaaag ctttctagat agagattttt aatactgata aagcagcgaa tagtactctc	660
	tttatagaga ttatatgttg tttgtccatc actogaatt	699
15		
	<210> 739	
	<211> 341	
	<212> DNA	
	<213> Proteus mirabilis	
20		
	<400> 739	
	cgagcatgac actaataatg gctttactgt cttggatgct gcacaagtta atgatcgtgg	60
	tgttgatgat ttagtcgcgc aaattaaaga gattgtgggt tcaottcctg tttatttgac	120
25	ttttgatatt gattgccttg atcccgcat tgcaccgggt acaggaacac cggttgtggg	180
	gggattaacc acggataagg cgctgaaaat gctgcgtgct ttacagccgt taaatattgt	240
	aggcatggac ttagttgaag tatcgccagc gtatgatcaa tcagatatta ccgcccttgc	300
30	cggagcaacc attgcacttg atatgctata totgcaagcg g	341
	<210> 740	
	<211> 323	
35	<212> DNA	
	<213> Proteus mirabilis	
	<400> 740	
	tacgtacatc gccaccagcg aaaactgcat attgccatta atacttttgc tcatcctgat	60
40	ggatttgaac gctggcaaaa agccattgat atggcggctc atttaggtgc cgatgcatta	120
	atattggcgc atattgctat gctagagtac gcagctgaac gctatccaca gatagagcgt	180
	catgtatcgg tacaggcgct gccactaat actcaggcaa togcatttta tcaacgcaat	240
45	tttgatgttg cagctattgt actaccagc gttctttcta ttcacaaagt caaacaattg	300
	gtcacaagta gtctgttcc ttt	323
50		
	<210> 741	
	<211> 360	
	<212> DNA	
	<213> Proteus mirabilis	
	<400> 741	
55	gaaatacgca ttaggctctg tactttatta ttggcaaaaa gaaacacttg agacatttta	60

EP 1 770 171 A1

tcggcaagca aaacagagcg atgctgatat tatctactta ggcgaaacag tctgtagtaa 120
gcgccgtgag actaaaccac aagattggat taatctggcc aaagaagtgg ctaaaagtgg 180
5 taaacaagtg atccttttcta ccttagcact actacaagcg ccttctgaac taaaagagat 240
agcaaagctg gtggataacg gtgaatTTTT agttgaggct catgattttg gtgtgatcaa 300
tatgctttat gagcgtcatt taccttttgt agtaggccat ggattaaact gctataacgc 360
10
<210> 742
<211> 516
<212> DNA
<213> Proteus mirabilis
15
<400> 742
caaggtttcg ctaactaaag agaaaccggc aattagctta actaaaaagg atgatttcgg 60
caaaatccgc attaacctcg attggcatcg agaaagtaaa agcgggtggt cggggttatt 120
20 aggtggatta tttggtggtg acaaaggtat tgatttagat attggcgccct ttgttgaact 180
acaagatggg tataagtcag tgatccaagc cttaggaaat ggattcgggtg attttaatcg 240
catgccttat gttgagttac aaggatgatga tcgcactggg gatgtagcgg gtggcgagtg 300
25 gattttttatc aatggacgtg aatggaaaaa tatcaagcaa gtgcttattt ttacttttat 360
ttatgaaggg gttcctaact ggagtaaaac agatgggtgtg gtcactattc atgttcccga 420
gcaaccacct atcgaaacac gtttaacgga tggtataaat ggtcgagcta tgtgtgccat 480
30 tgcacgactt attaatgaaa acggatcaat caaagt 516

<210> 743
<211> 516
35 <212> DNA
<213> Proteus mirabilis

<400> 743
ttctaaaggt ggtaatgttt cttaagcaa agcagcccca acgatgaaaa acgtcctagt 60
40 cggacttggg tgggatgcc gttctacaga tggatcaagat tttgacttag atgcatctgc 120
atctctgtta gccgctaata gaaaagtacg tagcgatgcc gatttcattt ttataaaca 180
cttaagatct tccgacggct ctgttggtca cactgggtgat aaccgaacag gtgaagggtga 240
45 tggatgatgat gaagcactaa aaatcaaact agataccatc ccagttatg tcgaaaaaat 300
tatcttttga gtgactatcc atgaagcgca accgcgtcgt caaagctttg gtcaggatc 360
tggatgcgttt attcgtttag ttaatgatga caaccaaatt gaagttgctc gttatgattt 420
50 aacggaagat gcatcaacgg aaacggcgat gttatttggg gagttatatc gtcataacgg 480
tgagtggaaa ttccgtgctg taggccaagg atatgc 516
55
<210> 744
<211> 500

EP 1 770 171 A1

<212> DNA
<213> *Proteus mirabilis*

<400> 744

5 gagccttggtt tatccctctt tcattccctt tactgcctt atcttgctac tgttgggcag 60
gaaatgggtct ggtggataga acatggacag ctacaggaat ggatagctat agttatcgcc 120
aagcgctaag acagccaacg gttggctcac gttatactct ttttaatat acaccgata 180
10 tgccaacgcc aggtggcacg agtcctgttg gtactaaagg aattcgctat attgcatga 240
aatatggccc ttatggacaa cctgaacact ataaaacct ccaagtgatg ttctctcact 300
attccaccac cactacacgt aaagtctgtt atttaggtga gttatatacc gttgtcggtg 360
15 atatttattt aatcgatcct gctgctacca ccaatgaatg gcaacgcggt cgtagccaaa 420
tagttgaaga gtattatgag attttagata cacatggaaa taggacaggc aaaggattgc 480
gttttaaccg ctgggataga 500

<210> 745
<211> 550
<212> DNA
<213> *Proteus mirabilis*

<400> 745

25 gctcatatca tcttccatcc ctgcctaacg taactaaca caagatgatt 60
atggggtaat tagtgactat ttgtctatt ttggcacctc taagttttct gctgggtatt 120
30 cgttacaaaa ctttctgaa ataccacta aaggtgaagt cgttacgaca ctgcgtaata 180
ttgttaatcg gtttgcgga tcatcagagg ggatcaatca ttggcgctat tacattgatg 240
cggtagagat ccatattcct ccattactgg tgccttatct gcaacaagaa aatgtcctcg 300
35 atgtcgtttg tactccttct atccccattg tcattggtgt gaatggccat tttcttaaag 360
atgaaaaatc acatttttct gcgttaagtt taaaacaact ttctgaacco atactgtcaa 420
atggcacttc cactatccag aaaaatgaag gtgatgcggc gcatttatta catattcgcc 480
40 aagaaaccaa cgaagagtat cggttacacc attcttcagg tttttggaat gggtcgttaa 540
tttgcttagg 550

<210> 746
<211> 401
<212> DNA
<213> *Proteus mirabilis*

<400> 746

50 aagataggta cgcttttaat ttcttacagt ttactcacia tgagtttgat ctctttttcc 60
tcctttgctc aagtaaata cgaatccctg accaaatgtt atgagttgtc aacagatgca 120
agccaaacaa ccattaaatc ttgtctatta gatgaactga gattatctga agagcagttg 180
55 aatgttatct ataataaag caaaggcgac cttgaagata gtgactctat cgcggctaaa 240

EP 1 770 171 A1

agtgctattg atgcattagt cagttcacaa gagcagttta ttcttttttag aagtagtgaa 300
 5 tgccaacgtc aatctgcttt aatgatgggg ggcaatgggtg ctgatgaagt actgctggct 360
 tgtgaaataa aattaaatca atggcgagct aaattattac t 401
 <210> 747
 <211> 513
 <212> DNA
 <213> Proteus mirabilis
 <400> 747
 15 tcacagtcac cactaatctc acgttgatta ttctaaata tagtcaagtt tcttgtgatg 60
 tgacaaatth tttcccgacc aaaccgattg aattacatac cttagtactg tctgaaactg 120
 aattacaatc tgtgttctct ttactcaaac cattaataaa atcaggggag cagattactc 180
 gtcatcttcc agattatcat ctatcaaac ctgaggtggt taaaactaat tttacgttac 240
 20 ttcagcaatg tctaccgctt gaacatggca cccctctca agagaccctg tttatgcaac 300
 agagcctctt tttatthttg ctggcggttt atcacgaag ggtagatatt cttaatattt 360
 25 ttctgtttta ttatgatgag ccaaaaaatc aggcgatcac tcatctaata acacaagatc 420
 cgcaacgtaa atggcattta gaggatgtag caaaaacgct ctatactaca ccatcaacat 480
 tacgtcgcca ttttaagtaa gagggcggtt cgt 513
 30 <210> 748
 <211> 583
 <212> DNA
 <213> Proteus mirabilis
 35 <400> 748
 acgtccctga aacactctca ttagccattg atagcttctt aagttatatc gaagttgaac 60
 ggcgattaag tccggtaacg gtagaaaatt accagcgaca attaatgacc attgcacaaa 120
 40 tgatgggtgc aataaaaaatc aaccaatggt cgttactgga aagccaacat gtgcgcatgt 180
 tattggctaa aagccatcgc agtggattac aacctgcaag tttagcattg cgcttttcag 240
 cattgcgtag cttccttgat tggcaagttt ctcaaggaat gttagcagta aaccccgcca 300
 45 aaggggttcg aacacccaaa tcaggtcgtc acttgctctaa aaatatggat gttgatgaag 360
 tcagccagtt gatgaatata gacttaaaag atccctctc tgtaagggat agaacgatgc 420
 tggaagtgat gtatggcgct ggattacgtt tatctgaact gactaactta aatatcaatg 480
 50 atattgatct ccaagaaggc gaagtccgag tattaggtta aggcagtaaa gagcgtaaag 540
 ttcccttggg aagaaaagct gtagagtgggt tacagcattg gtt 583
 55 <210> 749
 <211> 193
 <212> DNA

EP 1 770 171 A1

<213> Proteus mirabilis

<400> 749

5 caggaacggg tttcttatca tcaataagat gtctaattgc taaataggga tgataaatta 60

gcattcgagg ccagacccaa cgcattgactt gtttcattgc tgctcttttt actggctgat 120

agcagtgaat tgggcattgt ttgcaggcgg gtttttcttc accatagcga catttatcta 180

10 gtcttttata agc 193

<210> 750

<211> 520

<212> DNA

15 <213> Proteus mirabilis

<400> 750

atcacttcta tccaaaacga agtgaagaac gtttttagacg aaatcaaccg tattttctgaa 60

caaactcagt ttaacggcgt taaagtactg agcgggtgaga aatcagaaat ggttatccaa 120

20 gttggtacta acgataatga aactatcaaa tttaacttag ataaagttga taacgatata 180

ttaggtggtg ctacgcataa actgtttgat accaaaacag agaaaaaagg tgttacagca 240

25 gcagggtcgg gtgttactga tgctaaaaaa atcaatgcag ctgcgacact ggatatgatg 300

gtatcactgg taaaagaatt taatcttgat ggtaaaccag taactgataa atttattgtt 360

actaaaggty gtaaagacta ttagcaact aaaagtgatt ttgaattaga tgctacaggt 420

30 actaaacttg gattaaaagc atctgccact acagaattta aagttgatgc aggtaaagac 480

gttaaaactt taaacgttaa agatgacgct ttagcaactt 520

<210> 751

35 <211> 515

<212> DNA

<213> Proteus mirabilis

<400> 751

40 caacagtgat ttccatttga gaatctgtac cttctttacg agaagtcaga actaaatgg 60

taacgccatc ttgggctttt acaatagtgg cagaaacggt gccttctttt ttattgatag 120

catcacgtaa ttcaataata gaagtttggc tgtctgttaa ctctattttt aaaggctctt 180

45 tttcaccttt ttgggtgatc actaaagtcc gtgttttgcc ttacactaat gtttcaccaa 240

taggatcttt gatatactg acggcttttg atttcagtgt ttgagcatgg gcaagctctg 300

ttacagagac cgtataatta ccaatgcttg ctttaccatc agtggttact ttaaaggcat 360

50 caaactcatc atcaactttg gtggcgacga ttttatcgaa tttttttaat tcttcagatg 420

ctttctgtaa tttatctaata tggtacgaa tttttccata tgcagtaatt tgtgcatcgt 480

agcttttcat ctgtttgtct aaaggttcaa ggctg 515

55 <210> 752

EP 1 770 171 A1

<211> 274
<212> DNA
<213> *Proteus mirabilis*

5 <400> 752
acacaatcca ttcattcagtt agagcaggat ctaggacgac caccatcaga acaggaagtt 60
gctgatcatt tgcagattga gtttagcagaa tacccggcaga tcctattgga tacaataaac 120
10 agccagttgt tctcttatga cgaatggcat gaaattttacg gtgaaagctg tgaaccgtct 180
caagacgaag atcacgatga caatccttta caaatgttat tggaaagtga tatacgccaa 240
agagtcatag acgcgataga attgcttccc gaaa 274

15 <210> 753
<211> 657
<212> DNA
<213> *Proteus mirabilis*

20 <400> 753
gacttaattg ctctcgtat tgatagtaga gggaaaatca ctgctgctga aatttcagcc 60
tttactggac aaaacacctt ctcaacaacat tttgatattc tctcttcaca aaaaccggt 120
tcagcattag atagctatctt ctttggtagt atgcaatcgg gtctgtatccg cattattaat 180
25 acggctgaag gtagtggagt taaattagca ggtaaattta ccgcagataa cgacctaagt 240
gttaaagccg ataattattca aacagatagt caagtccgtt atgacagtta cgataaagat 300
ggcagtgaag attaccacaaa ctatcgtggc gggatcacgg ttaataatag tggctctagt 360
30 caaacactca ctaaaaccga attaaaagggt aaaaacatca cattagtagc gagtagccat 420
aatcaaatca aagcctctga tttaattgggg gatgacatca cgttacaagg tgctgattta 480
actatcgatg gtaaacagct acagcaaaaa gagaccgata ttgataatcg ctgggttctac 540
tcgtggaaat acgatgtgac taaagagaaa gaacaaatac agcaaattgg tagccaaatt 600
gatgctaaaa ataattgcgac attaaccgca actaaaggag atgttacctt agacgcg 657

40 <210> 754
<211> 622
<212> DNA
<213> *Proteus mirabilis*

45 <400> 754
attaagcgca aatgaaacag gaaatttagg ctcaatcagt gaatcaaggc gtgcattgca 60
agatagccaa cgtgaaatta atcaattaat agaacaaaat cgctatcagc aactgcaaga 120
50 aaaagcggta aatatttcac ctaccccaac tttaattact gagtcagaac actgtttgcc 180
tataaaaggc gtttatattc aagggtattac tttacttact gagaaggatc tcaattcatt 240
atctccgtta cctgatcaat gtattaagag tgctgatatt aatcgccctg taaaagaact 300
55 cacacagcgt tatcttcaac atgggttatat tacogcacgt atccaatttt tacgtcctaa 360

EP 1 770 171 A1

	ccaacatggc gaattaggtc tgtatgctat tgaaggggtt gttgaacgta ttgaaggggg	420
	tgatcgaggt gttaacacca cactactatt tcctcgaatc aaagggcaac cattaaaact	480
5	cgctacactc gatcaaggct tagatcaagc taaccgtttg caatcaaata aagtcacagt	540
	ggatattctt cccggtaccg aattgggggg ctctgtcatt aagttgtcta atcaacgaaa	600
	atcaccttgg catctcaata tc	622
10		
	<210> 755	
	<211> 450	
	<212> DNA	
	<213> Proteus mirabilis	
15		
	<400> 755	
	aaaaatgtag tgtttcagat tttagcatta ttaagagata gtattttagt taaaagtgat	60
	cgctgttcaa tgcttaattc cattgaagcc agagctccaa ttctggatta taggataatt	120
20	gaatttgcat ttaatgaggt tcctgataat tttaaaatta gaaatggaat gaaaaaattc	180
	ctattgaaag atatatcaaa aaaaatatta cctaattgagt ttgattttca gaggaaatta	240
	ggatttaatc taccactagg tatgatgac agagagggaa aatggaagga atttttcggg	300
25	gatatattaa attcaaaatc tgatataatt aattattatt tttatactaa aatgtttgat	360
	gagcatttaa gtggtaaaga gcgtgcagat cgtctatttg gcgtagtttt atttctaac	420
	tgggcaaaac ataataaagt atcgctatga	450
30		
	<210> 756	
	<211> 400	
	<212> DNA	
	<213> Proteus mirabilis	
35		
	<400> 756	
	taaattagct ttagttcttg gtttaggttt atctgttggt gcgggttctg ctttagctgc	60
	agatcaaggt catgggtactg ttaaatttgt tgggtcaatc attgatgctc cttgctcaat	120
40	tactcctgat actgaaaatc aaacagttcc actagggtcaa atttctactg ctgcattaaa	180
	agatgggtggc cgtagtaatt ctcgtgactt taaaatctct ttagaaaatt gtactacaga	240
	gacttacaaa actgttcaaa caactttcac tggtcttgaa gcaactgaag ttttagaagg	300
45	ttcttttaggc attgaaggta tcgctaaaaa tgcagctggt gttatcaccg atgcgggtgg	360
	taaacaaatc aaattaggca cccaagtgc tgctcaaaac	400
50		
	<210> 757	
	<211> 500	
	<212> DNA	
	<213> Proteus mirabilis	
55		
	<400> 757	
	tggcaccact attgctatgc cttgttgcca gtttagtgac tgcgccaacg atagccagt	60

EP 1 770 171 A1

	atgtaaaaca agataaaaac atgcatcagc gatttgggtg gctcaatcta caaggaacca	120
	tattagagcc gtcattgtgca atattcagcgg gaagtagtga tcaagtgatc ccgctaacga	180
5	cggtatctat cccaacgtta gtcactgaag gtcaaggacc gattgaatat ttttctatca	240
	gattaacgga ctgtacgcta attagccaga aagggcaaga agcggataat ccacgtttta	300
	tcgcaacggt cgatggctct tctaattgaa atggcaactt tgagttatcc ggtgaggcca	360
10	aaggtgcttc attagcgata gcggatcggt atggctcgaca agctattcca ggacaacccc	420
	taccgccgtg tggcattgat tcgcagtcga tggcattgct gtaccaagct cgaatagtca	480
	aaaataacga tacgccaaaa	500
15		
	<210> 758	
	<211> 546	
	<212> DNA	
	<213> Proteus mirabilis	
20		
	<400> 758	
	gatggtaatg ctgataataa caaagaactt tataccatta tgtttagtaa gcaatttcct	60
	gactggggat tgagtactta cttaaaactat agtcaccaa catattggaa taagccaact	120
25	aatgataatt acaacttata gtttagcgaag agcgcggata ttggctcggtt taaaaatata	180
	aatttttagtc tctccgcttt ccgtaataaa tttaatggca ccaatgataa tggcgtttat	240
	atgaatgtca gtatgccttg gggatgatcg gcgaccatca gttacaacac tgtcattaat	300
30	aagagcggta actctcataa tgtcagctat tacgatcgaa ttgatgacaa tagcagttat	360
	cgtgttggcg ctggggtaag tagcaatggt aaaccttcag ccgatgctta ttttatgcac	420
	tatgctgatg cggccttagt caccgccagt gcaagtcata tcaatgggtga atatacctct	480
35	gccactttat cgctacaagg tgggtgccaca cttacgccga aaggtggagc attacaccgc	540
	gttagt	546
40		
	<210> 759	
	<211> 320	
	<212> DNA	
	<213> Proteus mirabilis	
45		
	<400> 759	
	caatctatgc ctgcgaaacg gatttaacca atccttggca agagcagatc actttaacta	60
	aaaaagggtga tcgcttcgaa gtgaataatc caacgcctta ctatgtgaca ttagtcgatg	120
	gattaaccag tttgaaagga aaaagcttgg atggccttga accattaatg atgcaccta	180
50	aaagtagcgg cagcataaat ctgagtgctt ccatgcttgg tgcttcaccg gtattgagct	240
	acatcaatga ttatggcggc cgccttcaga tgaaattcac ctgtagtggc aatcaatgca	300
	aagtaacaga aacggcagct	320
55		

EP 1 770 171 A1

<210> 760
<211> 507
<212> DNA
<213> *Proteus mirabilis*

5

5
10
15
20

<400> 760
aacagtgggt tagcccaagc aaggcagtg tggtttttat tctggcaaca ttactggag 60
gcctgagttc tactgctgtt gctaacttac ctgcaggagc agtaataaga ggcacccccg 120
ggattgttta tatcaatatt actggaaacg tcatcgctcc acctccttgc ttaatcaatg 180
acggcaagat gatcgaggtg aattttggcg aagtaatgag tacgcgtatt aatgatagca 240
attataagca acctatcgaa tataccgga cttgccaaaa aagaccgact aacgccatga 300
aagtctatat aacaggtaat gcaacagggt tcgatagtaa tgcctacaa actaatatta 360
cgggattagg ggtacgcatt ctttatcaag gtaaattatt aggattaggc tcagcggta 420
aatttaccta tcccaatttg cctaaactag aagcgatccc tgtgcgtgat aatagagaaa 480
cactagttagg tggagatatt gttgcca 507

<210> 761
<211> 451
<212> DNA
<213> *Proteus mirabilis*

25
30
35
40

<400> 761
ttactaaatt ctacagcagt aatggcggcc gactcgcta atttaaaatt attcggaaca 60
ttattagtgc cacctccttg tggtatcagc aatgacgaac gaattgaggt tttttttggt 120
aagaacgtcg gtattaataa agttgatggt attaaactata ccgaatcggg gaattataacc 180
ttggtagtgc acgctaattt aaaagggttg gatttgggat tatcaattat cggacctaaa 240
accagtttg atgaggcggc attgcaaacc aatattccag atttaggtat tcatttaact 300
caagatggta agccttttaa gctaaatgag cgtattggga tttcaccaga ttgcctccg 360
gttattcaag ctgttcagat aaaaagaccg ggaagtacat tgccgaagg ggcatttgaa 420
gtctcagcca ccttattagc agaataccaa t 451

<210> 762
<211> 526
<212> DNA
<213> *Proteus mirabilis*

45
50
55

<400> 762
ccggttcata ttgggtctat ctgtatccat agggttaact tcagcggctt ttgcaatacc 60
ggacaacctc tattttcacg gcatattagt tgatgagcct tgtaccataa aaccgggtga 120
tgaaaccgtg gtactcgatt ttggcaatat tcctgataaa aacctttatg cctataaaaag 180
aacgccaagc aagttatttc aattacgtct gtcagaatgc gatctctcaa tcggtaaaaag 240
cgtcaaaaata acctttaaag gagaggaaaa ccaagcaatg gcaggagaag gatttttggc 300

EP 1 770 171 A1

aataagtccg ggcagccaag cttctggtat tgcggtggga ttagagtctg aaaatggtaa 360
 5 tgctctacct ataaataaag aaacagacaa gatgtcatta actgcgggtg acactatttt 420
 gaatttttat gcctttattc aaggtgagcc ggatgcgatt gcgaataagt cgattaaacg 480
 tggtcctttt agtgcaatag ccaccttcta tttgaattat gactga 526
 10 <210> 763
 <211> 505
 <212> DNA
 <213> Proteus mirabilis
 15 <400> 763
 ccttctaacg ccacttacac ttatgttatt gagcgttggg atccagaaac ctcaggaata 60
 ttaaatcctt gttatggttg gcctgtgtgt tatgtcacag tgaaccataa acatacagta 120
 aatggtaactg ggggaaatcc tgcatttcag attgctcgaa ttgaaaaact acgtacttta 180
 20 gctgaagttc gtgatgtagt acttaaaaaat agatcattcc ctattgaagg gcaaaccacc 240
 cacagagggc cttcattaaa ctctaataca gagtgtgtgg gattatttta tcaaccgaat 300
 tcaagtggta tatcaactcg aggaaaactc ttaccagggt cactatgcgg tatcgcacca 360
 25 ccaccagtgg gtgcttgtaa aatatctgaa ggtgcggtga accttaacta tggatgatt 420
 gatgaagcta gtttaagtgg tgctaagcgc tctgaaacaa tcaatgtaac ctgtaattta 480
 30 gcaatgaaag tgttggttat cgcac 505
 <210> 764
 <211> 408
 <212> DNA
 35 <213> Proteus mirabilis
 <400> 764
 aacatatgag ggtgtggact aatagaaaca ttggcttttt tacctaaacg gcgtaataac 60
 ccataaactt gttgacggga aattgggtccc gttttttgtg ataaaaatac ccattcagaa 120
 40 tctgattctc tccagttttc tctacttttc aaccagttgc ataaggcttc atattcctca 180
 tcaataatag gttgtgttgt tgaaagccca ctttttaaac gctgacata gagtattcta 240
 ctttctagat caatatcgct taatgttaaa ttacatagtt cgctaacacg aaaaccatgt 300
 45 aaaaaacaca ttaaaaacat acagtaatct ctttcgggat acctaccttc cttagcttgc 360
 tttaaaatag cattcacttc aaaacgtgta agaaatttac gttgcttc 408
 50 <210> 765
 <211> 310
 <212> DNA
 <213> Proteus mirabilis
 55 <400> 765
 ttgattttgc gaatatagat gtaaatgctt ctgtaggtaa aaagatccaa aaaaaacgta 60

EP 1 770 171 A1

	aagagctggg ttataccggt atgcagctgg ctaaaaaat tgggtgtcagc cagcaacagt	120
5	tttctcgcta tgaacgaggt atgaacaaaa tagatctcag acatttagtg ttgttagctc	180
	tctattttaa tacacccatt tattgggttt ttgaggattg ctacgtaaaa aagccttc	240
	taaataataa aggaatagat aagcgcaatt atgttattgc tcaagcaaca cctgatgctt	300
10	ttcattattg	310
	<210> 766	
	<211> 510	
	<212> DNA	
15	<213> Proteus mirabilis	
	<400> 766	
	tggagtatca gagctatttt gtttaagcct ttttttgga atattggact ttattcctat	60
20	cttgaaaaac ctatattctt attgggtatc aaaaaagtat ttttaggacg tagagttaga	120
	atcttccctc actctagaat tgaagtgc atgaaataaat tgtatgagga taatatctct	180
	ataggacagt catttcatat aatatgttca agtaatatta ttatatctga aggtacatta	240
25	atctctgcta atgtatttat tactgatact gatcatacat ataaaaatat ttctctacc	300
	attcatgttc aaaaaactaa tatttctacc acttatattg gtaaaaattg ttttatagga	360
	tatggcggtt ttattcaagc tggaaacaaa ttaggaaata attgtatcgt tggtgcaaac	420
30	tcaacaataa aaggctcttt ttctgataat tcaataattg taggttcacc tggacggatt	480
	attaaaaaac tagataaatt atggctgact	510
	<210> 767	
35	<211> 934	
	<212> DNA	
	<213> Proteus mirabilis	
	<400> 767	
40	ctatcagcca cctcttcttg aatacagaga atacgcaaag cagaacaacg ttgacccgca	60
	ctatcataag cagaggccat aacgtcagtg accacttggt ccgttaaggc agaagagtcg	120
	acaatcatgg cgtttaagcc acctgtttca gcaattaaag gaacagggcg accttcgcta	180
45	tcgagttctac ccgctaagggt tttttgcaaa atgtgggcaa ctctgggtaga gcctgtaaac	240
	atcacaccac gcacgcgttc atctgccact aattgtgcac caatgggtct cccttgacct	300
	ggtaagagtt gtaatgcact gcgaggtact cctgcttgat aaaatagttc tacggcttta	360
50	aaagcaatca gaggggtttg ctccgcaggt ttggccagta cgggtattacc tgccgctaac	420
	gccgctgcaa tttgtccact aaagatggct aatgggaagt tccaaggact aatacagaca	480
	acagggccta aaggacgatg ggtattatta tcaaaatcat ttgccacttg tgctgagtaa	540
55	taataaagaa aatcaattgc ctacgcact tctgcaatag cattactata ggttttgcc	600

EP 1 770 171 A1

	gcttctctta ctaagacccc cattaatggg cccatttgct gttccatcag ctcagccgtg	660
	cggactaaaa atgccgctct ttccgcaggt ggggttgcaa accaaatttc accattttct	720
5	tgggcaatat ctaaagcaaa attagcttcg gcggcgcgtc tttcacgtac tgtaccgacg	780
	acatcgggtgt gatttgccgg attgagtata gattgtgggtg caatcacttc ttctgcacta	840
	ttacactcac caccaatgag cggatggctg tgaatttttt ccatcgcaga ggtcagtaat	900
10	gcactggata atgaggctaa acgatgctca ttag	934
	<210> 768	
	<211> 501	
15	<212> DNA	
	<213> Proteus mirabilis	
	<400> 768	
	gcactagcta ctattctttc tgctgcattt gctggctcat ctatggcgta tgacggaaca	60
20	attacattta caggtaaagt tgttgcgcaa acctgctctg tcaatacaaa tgataagaat	120
	ttagcggtaa cattacctac agtatccacc actacattaa atgaaaatgc ggctactgca	180
	ggtcttaact catttactat tcatttaact ggttgcgctg ttgggtatgga tgggtgcacaa	240
25	agtgtcaaaa catattttga accttcaagt gacattgatg taaccacaca caacttaaaa	300
	aatactgcac aaactaaagc tgataatggt caagttcaat tacttaactc agatgcagca	360
	acaacaatcc agttaggtac tgattctgca acacaagatg tccatccagt acaaatcgac	420
30	aatgctaata taaacctccc atattttgct caatattatg caaccggaca atctaccgct	480
	ggggatgtaa aagcaaccgt t	501
35	<210> 769	
	<211> 383	
	<212> DNA	
	<213> Proteus mirabilis	
	<400> 769	
40	gaggtactgc atcgcaaacg cagacattga cggttgcaca agagggcttt ttagagtgg	60
	taccccaaga gaatatcttt tttoctgatg ctcaagtgtg tttaaccaca catattcatt	120
	tagcctcatc agcgaaattt atcggctggg aaatgcagtg ttttggaacg ccagttttta	180
45	atgagtgggt tgaaactggc aaggtaaaag ggcgcttaaa tttttatggt gatgagagat	240
	taattttaac agagtcaatg cgggttgaag gcttacaaaa acaagctgcc gcaatgcgtg	300
	aatttctat gtttggtcgt ctttatattt atcctgcaac cgatgcatta aaagagatta	360
50	ttcaacacca tttagagaag gta	383
	<210> 770	
	<211> 414	
55	<212> DNA	
	<213> Proteus mirabilis	

EP 1 770 171 A1

<400> 770
 gcgcttgaac taacctctac agaaaagcca aagttaaccc tttgtcttac catggatgag 60
 5 cgcaccaaaaa gtcgcttaaa agtggtctta agtgacgggc aagaagccgg gctatcttttg 120
 cctcgaggca ccgtacttaa agagggggat attctgctgt cagaagaggg cgatgttgtc 180
 accattgaag cggctaaaga gcaagtatca acggtttata gtgacgatcc attattgctt 240
 10 gctcgtgttt gttatcactt aggtaaccga catgtacat tgcaaataga agcgggttg 300
 tgtcgttatt ttcacgatca tgtattagat gatatggctc gcggcttagg ggcacgggtg 360
 gtggttggtc tagaaaaata ccaacctgag ccgggggctt atggtgggtc atcc 414
 15
 <210> 771
 <211> 500
 <212> DNA
 <213> Proteus mirabilis
 20
 <400> 771
 gctcagcaga aaccttgtca gattgggtta gcgcacaaat gaccggaaca ttagccacac 60
 tcgagcttcc tatattgagg caattacaaa cgagtttggc aaaggggtgat agcgatacag 120
 25 tgaaatattg gtgtgacttt atgggtcgaa gtgcgaaac caaagagtta aggcaggaag 180
 agcgtcaacc ggggatcgct tttccccgtt tacttcctca attaggcatt gaattagacg 240
 atacgttaca acagcgggtt aaacagacgc aattaatggc gtttgcgtta gctgccgtgc 300
 30 attggcatat cgatagtga aagctctgtt gtgcctatgt ttggggctgg ttagaaaaata 360
 cggatgatgc tggggtaaaa ctggtgccat tagggcaaag cgcagggcaa aaaatgttgt 420
 ttgctctagc tgagcagatc cccgctattg ttgagttatc ggcacattgg ccacaagagg 480
 35 atattggcag tttacgccag 500
 <210> 772
 <211> 560
 <212> DNA
 <213> Proteus mirabilis
 40
 <400> 772
 gggatcttct ataactatc aaccaaagta ttaccttctt ttgattatga taccgcagga 60
 45 aaacatatag cccgtgaaga ttccacttgg aatggcaa atgttattgg gcaaccgct 120
 gaggtgactt attcattccc aaaatgggaa ggcaaattta atcaatttgg taataagaat 180
 ccttatgaat ttaatgaatt acaaaaagag catgcaagaa aatctttaga tgcattggtc 240
 50 gatattgcaa atattaaatt tactgaagtt gctgttggga atgttgatgg aatgaaggct 300
 tctgacgtaa aaacagatat tacttttggg aatatctatg atcccaatgg cacatttcag 360
 gcttatgcaa cattgectaa tacctatgct tatggaaaag atctttctgg ccaagcatgg 420
 55 tttagtgatt atcattatgc aggtaatact acaccagaat tgggtaatta tggctgttta 480

EP 1 770 171 A1

actattatcc atgaaattgg tcatacactg ggtcttatgc atcctgggtga ttataacgca 540

5 ggtcagaatg ttccagggtta 560

<210> 773
<211> 509
<212> DNA
10 <213> Proteus mirabilis

<400> 773
tttctttgat ctacottggt tccctattta ccttttagtt attactttat ttaatccttg 60

gtaggatta ttgcacttt gtggtgcct tatcttattt gctttggcta tcttaatga 120

15 atatctatct aaaaatcatt taaaaaagc gaatagtttt gccaatcaag cacaattaat 180

acaaagtcac catttagaac atccacagac tatcgaagcg atgggaatgc ttagtcaatt 240

acgtaaacaa tggcaaacct ctcatattca atacttacaa gcacaaacac aagccagtga 300

20 taatgcagcc ggtatcaacg ctatcacaaa agtaacacgt atggcattac aatctttaat 360

gctaggttta gggggatggc ttgctattga taatactatt agtcctggaa tgatgattgc 420

25 aggttcaata ctttttaggtc gagcattagc cctattgag caagtgatca atgtatggaa 480

aagttgggat agtagtaaag cagcctaca 509

<210> 774
30 <211> 576
<212> DNA
<213> Proteus mirabilis

<400> 774
aagaacaagt agcaggtaaa gagtatgaaa atatcggggt atcacaattg ctaccaata 60

35 tttctgtcaa ttacaaaaat aatcctcgca actggcaacg taaggcttat ccaataaata 120

tatttcagga taaaataaca acagttgagt atcaaaacta tcaaagctat tctgtcaacg 180

40 cgattattag tcaaccacta ttgactaca ccgcatttag tgaatacaaa gcttctatca 240

ttaaaacatt attagcagac agtcattatc aaaataaatt ttcagaatta attattcgac 300

ttatcgataa ttatattcaa gttgcttata cacaagataa attattacta aatcaagcac 360

45 agcaagaaat ctatcaaaaa caactagctt caagtcaacg cctatttgag ttaggagaag 420

gaaccaaaac agatattgct gaaatagaga ctcgtttata tttaaccag tcacaatata 480

ccgatcttca attagaaatt gaaaaggcta aaaacaaact cagtgcctatg atcggttcac 540

50 aattgcctac tcatgagcac atcgcaaagc taactg 576

<210> 775
<211> 626
<212> DNA
55 <213> Proteus mirabilis

EP 1 770 171 A1

<400> 775
 ccaacttact tctatctacc tgatggtaaa attggtataa attatatgta tggttggcct 60
 5 aaacaaccac atagtaatat caccaaaata aattatatat tccctgatta tgataaaaaa 120
 agaaattact caaataaaaa atattcagta acagaaaaag atagaataga atcaataaaa 180
 cataccgcta aagtatatga attgacctat ctttaaggaaa aaaaagaaaa agaaatcgct 240
 10 tcattaaaat attatagaaa taaatattca ataagtagaa tagctgaatt agaaaaagat 300
 atagaggata tagaaaatag tattatTTTT cacaagaata gtatacatcc gtattttttac 360
 aatacacaaa caaccatata tcctcatcaa caagaagtta tttccgatat tcttagtgaa 420
 15 attgccata taacacaagc aaagtttggt gcatctaate cagaattcga tgccgatata 480
 aaatttggtt tttacgatga ttttcatatt agtcatggtt caatagaatt ttcataatcc 540
 accagaggtt ttgcaacctc ccctagcaga tattcaacct ctataaaaaa gataaatatt 600
 20 gatgaacaat accaatactc tggaac 626

 <210> 776
 <211> 583
 <212> DNA
 25 <213> Proteus vulgaris

 <400> 776
 catcttattg tgggtccaag cctacagcaa ttttaataaag tattagctta tgagatacga 60
 30 actttcatcc ccgaggagct catttttagtt gatggcactc cgcttaaaat tccccagct 120
 ctgcgtaata aaatctacaa tgaattaggt atttcctttt ttgataaaaa aacagcatta 180
 aaagaagggc ttcattgggc gaaagaagat gatgagctta gccaacagat gtctgaatac 240
 35 cttaatggtg aaaccgtaat ttggattgag agcacactgg aatatcctgt tttatggatt 300
 aacacctata tttcaccttc tttatggatc cgggttccac tcaactgaatt aggcgaaaaat 360
 ttcttactgc cagtttatcg ccaagcaatt atttttatta ttattgttat tgcctttttc 420
 40 tggttatata accgttttca aaatcgccca ttaaacgaag tggaatatgc agctcgctcg 480
 attggtaaag gcgttattcc tccccctatc ccagaatcag gttcacatcaga gatgcgttcg 540
 atcattogag catttaatca aatgtcatca ggtattcgct ctt 583
 45
 <210> 777
 <211> 383
 <212> DNA
 50 <213> Proteus vulgaris

 <400> 777
 cgtaagcctt atgttcgtgg tatgcagcca aactgggtgga cgaaactcgg tttctatcgt 60
 ttctacatca cccgtgaagg aacttgtcta ccacaacttt gggttcagtct gggtgtactg 120
 55 ttccgtgtat ttgcactgaa aaatggacca gaaagttggg cgggattcgt tggattccta 180

EP 1 770 171 A1

	agtaacccaa tactgatgct gattaatatt gtgaccctta togcaacggt attccatacg	240
	gccacttggt ttaagcttgc accgaaagcc gttaatatcg tcgttaaaga tgaaaaatta	300
5	ccacaagagc ctatcgttcg tggtttatgg ggtctaacca tcgtcgtgac tgtcgttatt	360
	ctggcagtggt cgctaattgt tta	383
10	<210> 778 <211> 345 <212> DNA <213> <i>Proteus vulgaris</i>	
15	<400> 778 aatcagaatc aacttctctaa gcgctctgat gaacctatctt tctggggatt atttgggtgca	60
	gggtggtatgt ggagtgcgat tgtctctcca gcaattatta tctgctcgg tattctaatc	120
	ccgatgggta ttgcgcgaga agcatttact tacgatcgta tcatggcatt tagccaaggt	180
20	tttattggtc gtattttctt actgctaattg attattctgc cagtttggtg tgcattacac	240
	cgtattcacc atacgttgca ccattttaaa gtgcatgtac ctgctagtaa ttgggtattt	300
	tatgggtgctg cagcaattat tagcggttacc gcaattattg gtggt	345
25	<210> 779 <211> 534 <212> DNA <213> <i>Proteus vulgaris</i>	
30	<400> 779 gcgaagtaga agagaaagca cagcgcgaag cacaagaaaa agcacagcgc gcagctgaag	60
	aaaaagcaaa acgtgaagca caagaggcca agaaacaggc cgaagaaaaa gcgaaacgtg	120
35	aagctgaaga agcaaaacgt gaagcagcgg aattagctaa gcgcgaagca gcggaaaaaa	180
	ataaagtga acaaaacgat aaacaaaaag ctgatgtagc agatcaggat aaagcacgtc	240
	gcaatgctga actggctgaa ctgaaacgta aaacagaaga agcacagcgc cttaaagttg	300
40	aagaagagac gcgcgctgca gcagaaaaag cagcgcgctt agctgaagaa aacgctgaaa	360
	aatggactgc tgaacctaat gctcctgaaa cagaaagcgc ggaactatcat gtaactacat	420
	ctcgttatgc tcgtgatgca gaagatgaaa gcgatgcaga agtagaaggt gatcgccgcc	480
45	gcggtcgtac tgctaaagca cctcgtgcta agaaaaataa ccgccactct gaaa	534
50	<210> 780 <211> 582 <212> DNA <213> <i>Proteus vulgaris</i>	
	<400> 780 agctgatggt gttgttggtg gtgctggtat ccttgggtatt atgacagcaa ttaaccttgt	60
55	agaacgtgggt ttatctggtg taattgttga gaaaggtaat atgcgggtg agcaatcttc	120

EP 1 770 171 A1

	gagattctat ggtcaggcaa ttagctataa aatgccagat gaaacgttct tattacacca	180
	tttgggcaaa catcgctggc gtgaaatgaa tgcgaaagta ggtattgata ctacttatcg	240
5	tacacaaggc cgcgttgaag ttctctttga tgaagaagat ttagttaacg taagaaaatg	300
	gattgatgaa agaagtaaaa atggttggtc agatattcca tttaaaacca gaattattga	360
	aggtgctgaa ttaaatcaac gtcttcgtgg cgcgacaaca gattggaaaa ttgctggctt	420
10	tgaagaagat tctggttagct tgcgtccaga agttgcaacc ttcgttatgg ctgaatacgc	480
	taaaaaaatg ggtgttagaa tttacactca atgcgcggct cgtggcttag aaacacaagc	540
	tggtgtaatt tctgacgttg taacagagaa aggtgcaatc aa	582
15		
	<210> 781	
	<211> 553	
	<212> DNA	
	<213> Proteus vulgaris	
20		
	<400> 781	
	ctaaatatgg cgcaggaaca aattactttg atatatccaa agagttatta ccgaagtggg	60
	cttgttatat tgccaatgct tcattgatct ttgtattata tatattgatc tatgcttata	120
25	tctctgcggc gggttctatt atctatgaag catcactgtt atatggtatt aattttaatc	180
	tgagagctat attttttatt tttacgatag cccttggtgc tacaatatgg tgggggtggcg	240
	cttgtgctag ccgtttaacc tcaattttct tattcattaa gatagtatta tttatattag	300
30	cgttttcggg tttgtttttt aaagcaaaag gtgatttatt atttagtgca acttttgag	360
	gaaaaagcca attatatctt tatcctttta tttttattat cattccttat gccattacct	420
	catttgata tcatggtaat gtttgtagtc tttataagct ttataatcaa aacgaaagaa	480
35	aagtagttaa gagttgtatc attggttgct tgtagcatt agtcactctat ttactttgga	540
	tgattggcac tat	553
40		
	<210> 782	
	<211> 260	
	<212> DNA	
	<213> Proteus vulgaris	
45		
	<400> 782	
	gttcataggc ttcacgtagt tcagcacagt ttttaacaga gtttaaattg ctaacagggg	60
	accaaacacg agaaagctta tcgcctgctt ctgctaattg ttggcaaagg ttatcctgag	120
	taaattgagt attatcagcc agtaattttt caactgtttc acgatatgtg gttaaaactt	180
50	cgtttagtgc aggaacgaca tgttctgggt tgataaggga aaatgcaggc aatcccgttg	240
	tgctaagtaa tggatttgac	260
55		
	<210> 783	
	<211> 199	

EP 1 770 171 A1

	<212>	DNA	
	<213>	<i>Proteus vulgaris</i>	
	<400>	783	
5		tggctgaaaa tgtcgttaat gatattctaa aatgggttaga aaccagtta caacgtaacg	60
		aagggtataaa aatcgataact attgcgaaca aaagtgggta ttcaaaatgg cacttacaac	120
		gcatatttaa agatttttaa ggctgcacat taggcgaata tgtccgcaa cgtcgcttat	180
10		tagaagcggc taaatcatt	199
	<210>	784	
	<211>	220	
15	<212>	DNA	
	<213>	<i>Proteus vulgaris</i>	
	<400>	784	
		gaaaggactt aaacttaact atccagagtc tgtcgatta attagttgcg cgattatgga	60
20		aggtgcaaga gaaggtaaaa cagtggctca attaattgagt gaagggcgtg ctgtattaac	120
		agcagaacaa gttatggaag gcattcctga gatgatcaaa gacattcagg tggaatgcac	180
		attccctgat ggtacaaaac ttgtttctat tcacgaccct	220
25	<210>	785	
	<211>	503	
	<212>	DNA	
	<213>	<i>Pseudomonas aeruginosa</i>	
30	<400>	785	
		actgacgctt atttgattga cactccattt acagctaaag atactgaaaa gttagttact	60
		tggttttag agcgcggcta taaaataaaa ggcagtatct cctctcattt tcatagcgac	120
35		agcacgggag gaatagagtg gcttaattct caatctattc caacatatgc atctgaatta	180
		acaaatgaac ttcttaaaaa agacggtaag gtacaagcta aaaattcatt tagcggagcc	240
		agctattggg tagttaagaa aaagattgaa attttttatc ctggcccagg gcacactcca	300
40		gataacgtag tggtttggct acctgaacat agagttttgt ttgggtggtg ttttggttaa	360
		ccgtatgggc taggtaattt gggtagcgca aatttagaag cttggccaaa gtctgccaaa	420
		ttattagtggt ccaaatatgg taaggcaaaa ctggttggtc caagtcacag tgaagttgga	480
45		gatgcatcac tcttgaaacg tac	503
	<210>	786	
	<211>	348	
50	<212>	DNA	
	<213>	<i>Staphylococcus epidermidis</i>	
	<400>	786	
		atggataata aaacgtatga aatatcatct gcagaatggg aagttatgaa tatcatttgg	60
55		atgaaaaaat atgcaagtgc gaataatata atagaagaaa tacaaatgca aaaggactgg	120

EP 1 770 171 A1

	agtcacaaaa ccattcgtac acttataacg agattgtata aaaagggatt tatagatcgt	180
	aaaaaagaca ataaaaatatt tcaatattac tctctttag aagaaagtga tataaaatat	240
5	aaaacatcta aaaactttat caataaagta tacaaaggcg gtttcaattc acttgtctta	300
	aactttttag aaaaagaaga tctatcacaa gatgaaatag aagaattg	348
10	<210> 787 <211> 530 <212> DNA <213> Pseudomonas aeruginosa	
15	<400> 787 tagctcgtgc atcaaaggaa tatcttccag catcaacatt taagatcccc aacgcaatta	60
	tccgcctaga aactgggtgc ataaagaatg agcatcaggt tttcaaattg gacggaaagc	120
	caagagccat gaagcaatgg gaaagagact tgaccttaag aggggcaata caagtttcag	180
20	ctgttcccgat atttcaacaa atcgccagag aagttggcga agtaagaatg cagaaatacc	240
	ttaaaaaatt ttcctatggc aaccagaata tcagtgggtg cattgacaaa ttctggttgg	300
	aaggccagct tagaatttcc gcagttaatc aagtggagtt tctagagtct ctatatattaa	360
25	ataaattgtc agcatctaaa gaaaaccagc taatagtaaa agaggctttg gtaacggagg	420
	cggcacctga atatctagtg cattcaaaaa ctggtttttc tgggtgtggga actgagtcaa	480
30	atcctgggtg cgcatgggtg gttgggtggg ttgagaagga gacagaggtt	530
35	<210> 788 <211> 322 <212> DNA <213> Proteus vulgaris	
40	<400> 788 aacttggtg aattaagtgc tgctacattg caatatagcg ataatacagc aatgaataag	60
	atattagatt atttaggcgg tccagccaaa gtcactcaat ttgcacgttc aattaatgat	120
	gtcacttatt gccttgatcg taaagagcct gaattaaata cagcaattca tgggtgatcct	180
	cgtgatacta cttctccaat tgcgatggct aaaagtcttc aagcactgac attaggcgat	240
	gcactaggtc aatctcagcg tcaacaactt gtgacttggg taaaaggtaa tacaacgggt	300
45	gataacagta ttaaagcggg tt	322
50	<210> 789 <211> 625 <212> DNA <213> Klebsiella oxytoca	
55	<400> 789 ttatctgcaa cactgatttc cgtctgctg gcgttttccg ccccggggtt ttctgccgct	60
	gataatgtcg cggcgggtgg ggacagcacc attaaaccgc tgatggcaca gcaggatatt	120

EP 1 770 171 A1

	cccgggatgg cggttgccgt ctccgtaaag ggtaagccct attatttcaa ttatgggtttt	180
	gccgatattc aggcaaaaca gccggtcact gaaaatacac tatttgagct cggtatctgta	240
5	agtaaaactt tcacagggtgt gctgggtgcg gtttctgtgg cgaaaaaaga gatggcgctg	300
	aatgatccgg cggcaaaata ccagccggag ctggctctgc cgcagtggaa ggggatcaca	360
	ttgctggatc tggctaccta taccgcaggc ggactgccgt tacagggtgcc ggatgcggta	420
10	aaaagccgtg cggtatctgct gaatttctat cagcagtggc agccgtcccg gaaaccgggc	480
	gatatgcgtc tgtatgcaaa cagcagtatc ggccgtgttg gtgctctgac cgcaaacgcg	540
	gcgggggatgc cgtatgagca gttgctgact gcacggatcc tggcaccgct ggggttatct	600
15	cacaccttta ttactgtgcc ggaaa	625
	<210> 790	
	<211> 482	
20	<212> DNA	
	<213> Staphylococcus aureus	
	<400> 790	
	gaaaattcac gtatgtcatg gaatcataag cattaccctt ttgatgcttg gaataaggaa	60
25	caagatttaa atacagcaat gcaaaattca gttaattggc acttcgaacg tattagcgat	120
	caaataccaa agaactatac tgcgactcaa ctcaagcaat taaattatgg taataaaaaat	180
	ttgggaagtt ataaaagcta ttggatggaa gatagtttga aaatatctaa tcttgaacaa	240
30	gtaatagttt ttaaaaatat gatggaacaa aataaccatt ttagtaaaaa agcaaagaat	300
	caattatctt cttcattatt gattaagaaa aatgaaaagt atgaactgta tgggaaaaca	360
	ggtacaggta tagtaaacgg gaagtataat aatgggtggc ttgtagggtta cgtaattaca	420
35	aatcatgata agtattatct tgctacacat ttatcagatg gaaagccatc tgggaaaaat	480
	gc	482
40	<210> 791	
	<211> 703	
	<212> DNA	
	<213> Pseudomonas aeruginosa	
	<400> 791	
45	acgttctgac tggaggaagt ttttcagcga atttcaagcc aaaggcacga tagttgtggc	60
	agacgaacgc caagcggatc gtgccatggt gggttttgat cctgtgcgat cgaagaaacg	120
	ctactcgctt gcacgacat tcaagatacc tcatacactt tttgcacttg atgcaggcgc	180
50	tggtcgtgat gagttccaga tttttcgatg ggacggcggt aacaggggct ttgcaggcca	240
	caatcaagac caagatttgc gatcagcaat gcggaattct actgtttggg tgtatgagct	300
	atttgcaaag gaaattggtg atgacaaagc tcggcgctat ttgaagaaaa tcgactatgg	360
55	caacgccgat ccttcgacaa gtaatggcga ttactggata gaaggcagca ttgcaatctc	420

EP 1 770 171 A1

5 ggcgaggag caaatgcat ttctcaggaa gctctatcgt aacgagctgc cctttcgggt 480
 agaacatcag cgcttgggtca aggatctcat gattgtggaa gccggtcgca actggatact 540
 gcgtgcaaag acgggctggg aaggccgtat gggttgggtg gtaggatggg ttgagtggcc 600
 gactggctcc gtattcttcg cactgaatat tgatacgcca aacagaatgg atgatctttt 660
 10 caagagggag gcaatcgtgc gggcaatcct tcgctctatt gaa 703

 <210> 792
 <211> 758
 <212> DNA
 15 <213> Klebsiella pneumoniae

 <400> 792
 tcacgctgtt gttaggaagt gtgccgctgt atgcgcaaac ggccggacgta cagcaaaaac 60
 ttgccgaatt agagcggcag tcgggaggca gactgggtgt ggcattgatt aacacagcag 120
 20 ataattcgca aatactttat cgtgctgatg agcgcctttgc gatgtgcagc accagtaaaag 180
 tgatggccgc ggccgcggtg ctgaagaaaa gtgaaagcga accgaatctg ttaaatacagc 240
 gagttgagat caaaaaatct gaccttggtta actataatcc gattgcgga aagcacgtca 300
 25 atgggaacgat gtcactggct gagcttagcg cgccgcgct acagtacagc gataacgtgg 360
 cgatgaataa gctgattgct cacgttggcg gcccggtag cgtcaccgcg ttcgcccagc 420
 30 agctgggaga cgaaacgttc cgtctcgacc gtaccgagcc gacgttaaac accgccattc 480
 cgggcgatcc gcgtgatacc acttcacctc gggcaatggc gcaaactctg cggaatctga 540
 cgctgggtaa agcattgggc gacagccaac gggcgcagct ggtgacatgg atgaaaggca 600
 35 ataccaccgg tgcagcgagc attcaggctg gactgcctgc ttcttgggtt gtgggggata 660
 aaaccggcag cggtgactat ggcaccacca acgatatgc ggtgatctgg ccaaaagatc 720
 gtgcgcgct gattctggtc acttacttca ccagcct 758
 40
 <210> 793
 <211> 680
 <212> DNA
 <213> Streptococcus pneumoniae
 45
 <400> 793
 cggaactgta taatcccttg aattccgtag aagattctac taatcggcgc gatactgtct 60
 tgcagaatat ggttgcagca ggatatattg ataaaaacca agaaaccgaa gctgctgaag 120
 50 ttgatatgac ttcgcaattg cacgataagt atgaaggaaa aatctcagat taccgttacc 180
 cctcttattt tgatgcggtg gttaatgaag ctgtttccaa gtataatcta acagaggaag 240
 agattgtcaa taatggctac cgcatttaca cagagctgga ccaaaactac caagcaaata 300
 55 tgcagattgt ttatgaaaac acatogctat ttccagggc agaggatgga acgtttgctc 360

EP 1 770 171 A1

	aatcaggaag tgtagctctc gaaccgaaaa cagggggagt tcgtggagtt gtcgggtcaag	420
	ttgctgacaa tgataaaact ggattccgga atttcaacta tgcaacccaa tcaaagcgta	480
5	gtctcggttc tacaattaag cctttagttg tttatacacc agcagttgaa gcaggctggg	540
	ctttgaataa gcagttggat aaccatacca tgcagtatga tagctataag gttgataact	600
	atgcagggat caaaacaagt cgagaagttc ctatgtatca atccttggca gaatcgctta	660
10	atctacctgc tgttgccact	680
	<210> 794	
	<211> 669	
15	<212> DNA	
	<213> Klebsiella pneumoniae	
	<400> 794	
	cgtaggcatg atagaaatgg atctggccag cgcccgcacg ctgaccgcct ggcgcgccga	60
20	tgaacgcttt cccatgatga gcacctttaa agtagtgctc tgccggcgag tgctggcgcg	120
	ggtggatgcc ggtgacgaac agctggagcg aaagatccac tatcgccagc aggatctggt	180
	ggactactcg ccggtcagcg aaaaacacct tgccgacggc atgacggtcg gcgaactctg	240
25	cgccgcgccc attaccatga gcgataacag cgccgccaat ctgctactgg ccaccgtcgg	300
	cggccccgca ggattgactg cctttttgcg ccagatcggc gacaacgtca cccgccttga	360
	ccgctgggaa acggaactga atgagggcgt tcccggcgac gcccgcgaca ccactacccc	420
30	ggccagcatg gccgcgaccc tgcgcaagct gctgaccagc cagcgtctga gcgcccgttc	480
	gcaacggcag ctgctgcagt ggatggtgga cgatcgggtc gccggaccgt tgatccgctc	540
	cgtgctgccg gcgggctggt ttatcgccga taagaccgga gctggcgagc ggggtgcgcg	600
35	cgggattgtc gccctgcttg gccgaataa caaagcagag cgcattgtgg tgatttatct	660
	gcgggatac	669
40	<210> 795	
	<211> 551	
	<212> DNA	
	<213> Salmonella typhimurium	
45	<400> 795	
	cacgatagtt gtggcagacg aacgccaagc ggatcgtgcc atgttggttt ttgacctgt	60
	gcgatcgaag aaacgtact cgctgcacg gacattcaag atacctcata cactttttgc	120
	acttgatgca ggcgctgttc gtgatgagtt ccagattttt cgatgggacg gcgttaacag	180
50	gggctttgca ggccacaatc aagaccaaga tttgcgatca gcaatgcgga attctactgt	240
	ttgggtgtat gagctatttg caaaggaaat tgggtgatgac aaagctcggc gctatttgaa	300
	gaaaatcgac tatggcaacg ccgatccttc gacaagtaat ggcgattact ggatagaag	360
55	cagccttgca atctcggcgc aggagcaaat tgcatttctc aggaagctct atcgtaacga	420

EP 1 770 171 A1

gctgcccttt cgggtagaac atcagcgctt ggtcaaggat ctcatgattg tggaagccgg 480

5 tgcgaactgg atactgcgtg caaagacggg ctgggaaggc cgtatgggtt ggtgggtagg 540

atgggttgag t 551

<210> 796
<211> 557
<212> DNA
<213> Staphylococcus haemolyticus

10

<400> 796

15 agcttttggt ttatatctct attggtatta ttttttaggt acatattaaa acgctatttt 60

aattatatgt taaattataa agtttggtat ctaactcttc ttgcaggatt aattcctttc 120

attcctatta aattctctct ttttaaattt aataatgtga ataataagc gccacagtt 180

20 gaaagtaagt cacacgactt gaaccataac ataaatacca ccaaactat tcaagagttc 240

gcaacagata tccataagtt taattgggat tcaattgata atatctgcac agttatttgg 300

atagtttttag ttattatttt aagtttttaa tttttgaaag ccttattata tcttaaatat 360

25 ttaaagaaac agtcacttta tctaaacgaa aatgaaaaaa ataaaataga tacgatactt 420

ttcaaccatc aatataaaaa aaatattgtg attcgaaaag cagagactat tcaatctcca 480

ataacttttt ggtatgggaa atatattatt ttgattccta gttcatattt taaaagtgtg 540

30 attgacaaaa gactaaa 557

<210> 797
<211> 558
<212> DNA
<213> Pseudomonas aeruginosa

35

<400> 797

40 ttgacgaagg cgtttatggt catacttctt ttgaggaagt taacggctgg ggctggttc 60

ctaaacacgg cttggtggtt cttgtaaata ctgacgctta tttgattgac actccattta 120

cagctaaaga tactgaaaag ttagttactt ggttttaga gcgaggctat aaaataaaag 180

gcagtatctc ctctcatttt catagcgaca gcacgggagg aatagagtgg cttaattctc 240

45 aatctattcc aacatatgca tctgaattaa caaatgaact tcttaaaaaa gacggtaagg 300

tacaagctaa aaattcattt agcggagcca gctattggtt agttaagaaa aagattgaaa 360

ttttttatcc tggcccaggg cacactccag ataacgtagt ggtttggtta cctgaacata 420

50 gagttttggt tgggtggtgt tttgttaaac cgtatggtct aggtaatgtt ggtgacgcaa 480

atttagaagc ttggccaaag tctgccaaat tattagtgtc caaatatggt aaggcaaaac 540

tggttggtcc aagtcaca 558

55

<210> 798

EP 1 770 171 A1

<211> 421
<212> DNA
<213> *Staphylococcus aureus*

5 <400> 798
ttaaagaatg gaaccaagat caaaatttaa attcttcaat gaaatattca gtaaattggt 60
attacgaaaa tttaaacaaa catttaagac aagatgaggt taaatcttat ttagatctaa 120
10 ttgaatatgg taatgaagaa atatcaggga atgaaaatta ttggaatgaa tcttcattaa 180
aaattttctgc aatagaacag gttaatttgt tgaaaaatat gaaacaacat aacatgcatt 240
ttgataataa ggctattgaa aaagttgaaa atagtatgac tttgaaacaa aaagatactt 300
15 ataaatatgt aggtaaaact ggaacaggaa tcgtgaatca caaagaagca aatggatggt 360
tcgtagggtta tgttgaaacg aaagataata cgtattatctt tgctacacat ttaaaaggcg 420
a 421

20 <210> 799
<211> 260
<212> DNA
<213> *Klebsiella oxytoca*

25 <400> 799
gacaataaccg cgatgaataa gatgattagc taccttggcg gaccggaaaa ggtgaccgca 60
ttcgcccaga gtatcgggga tgtcactttt cgtctcgatc gtacggagcc ggcgctgaac 120
30 agcgcgattc ccgpcgataa gcgcgatacc accaccccgt tggcgatggc cgaaagcctg 180
cgcaagctga cgctgggcaa tgcgctgggc gaacagcagc gcgccagtt agtgacgtgg 240
ctaaaaggca ataccaccgg 260

35 <210> 800
<211> 605
<212> DNA
<213> *Streptococcus pyogenes*

40 <400> 800
aatcatcctc gtggctttga tcagcattta aaactactgt aataaccctc atttgatttt 60
cgacactagt agctacaaaa gaagcaccgg cttttttaga ataaccaaca aaaagaccat 120
45 ccacgccttc tcgataacaa ggcattgcctt taagcatgta attataactg taaatggttt 180
gtccagcaaa aatagtggag gatttgctag ataatttcag tacttctgga aattctaata 240
agagatgcct ggcaataaca gctaaatcag tggcgcaaaa acaattttca tcactctggtt 300
50 ctgtattagg ataagtatta gctcctaaaa aatggttagt taagccagtt gaattgaoga 360
cctttgcctc ggaaatgcc cattgtctta attgtttttt cattttgtca acaaatttgg 420
gttcggttcc gcctatcttt tcagctaaag caatagcggg gctattggcg ttattaacaa 480
55 ctaacgcact taaaagttct ttaacgggat attttctctt atcaagagga acattactaa 540

EP 1 770 171 A1

	tagtatagtt ttagtgaggt tcataagggt agttagaaat agttacagga ctatcccaat	600
	ttagc	605
5	<210> 801 <211> 713 <212> DNA <213> Staphylococcus aureus	
10	<400> 801 tacagtcatt tcacgcaaac tgttggccac tatgagttaa agcttgctga aggttatgaa	60
	acacatttag tgggaataaa gaacaataat aacgagggtca ttgcagcttg cttacttact	120
15	gctgtacctg ttatgaaagt gttcaagtat ttttattcaa atcgcggtcc agtgatcgat	180
	tatgaaaatc aagaactcgt acactttttc tttaatgaat tatcaaaata tgttaaaaaa	240
	catcgtttgtc tatacctaca tatcgatcca tatttaccat atcaataactt gaatcatgat	300
20	ggcgagatta caggtaatgc tggtaatgggt tggttctttg ataaaatgag taacttagga	360
	tttgaacata ctggattcca taaaggattt gatcctgtgc tacaaattcg ttatcactca	420
	gtgttagatt taaaagataa aacagcagat gacatcatta aaaatatgga tggacttaga	480
25	aaaagaaaca cgaaaaaagt taaaaagaat ggtgttaaag taagatattt atctgaagaa	540
	gaactaccaa tttttagatc attcatggaa gatacgtcag aatcaaaagc ttttgctgat	600
	cgtgatgaca agttttatta caatcgctta aaatattaca aagaccgtgt gttagtgcct	660
30	ttagcgtata tcaattttga tgaatatatt aaagaactaa atgaagagcg tga	713
35	<210> 802 <211> 715 <212> DNA <213> Staphylococcus aureus	
	<400> 802 agttgtagtt gtcgggtttg gtatatattt ttatgcttcc aaagataaag aaattaataa	60
40	tactattgat gcaattgaag ataaaaattt caaacaagtt tataaagata gcagttatat	120
	ttctaaaagc gataatgggtg aagtagaaat gactgaacgt ccgataaaaa tatataatag	180
	tttaggcgtt aaagatataa acattcagga tcgtaaaata aaaaaagtat ctaaaaaataa	240
45	aaaacgagta gatgctcaat ataaaattaa aacaaactac ggtaacattg atcgcaacgt	300
	tcaatttaat tttgttaaag aagatgggtat gtggaagtta gattgggcat atagcgtcat	360
	tattocagga atgcagaaag accaaagcat acatattgaa aattttaaata cagaacgtgg	420
50	taaaatttta gaccgaaaca atgtggaatt ggccaatata ggaacagcat atgagatagg	480
	catcgttcca aagaatgtat ctaaaaaaga ttataaagca atcgctaaag aactaagtat	540
	ttctgaagac tatatcaaac aacaaatgga tcaaaattgg gtacaagatg ataccttcgt	600
55	tccacttaaa accgttaaaa aaatggatga atatttaagt gatttcgcaa aaaaatttca	660

EP 1 770 171 A1

	tcttacaaact aatgaaacag aaagtcgtaa ctatcctcta ggaaaagcga cttca	715
5	<210> 803 <211> 360 <212> DNA <213> Staphylococcus haemolyticus	
10	<400> 803 gccataaagc aagttgaaat atctatggct gaatgggatg ttatgaatat aatatgggat	60
	aaaaaatcag tatcagctaa tgaaattgta gttgaaattc aaaaatataa agaagttagc	120
	gataaaacga ttagaacatt aatcacaaga ctatataaaa aagagattat aaaacgatac	180
15	aaatcagaga atattttattt ttactcatca aatattaaag aagacgatat taaaatgaaa	240
	actgctaaaa cctttcttaa taaactgtat ggaggggaca tgaaaagttt agtgctgaat	300
20	tttgcgaaaa atgaagaatt aaataacaaa gaaattgaag aattgcgaga ctttttaaat	360
25	<210> 804 <211> 300 <212> DNA <213> Pseudomonas aeruginosa	
	<400> 804 catgcgtgta aatcatcgtc gtagagacgt cggaatggcc gagcagatcc tgcacgggtc	60
	gaatgtcgta accgctgcgg agcaaggccg tcgcgaacga gtggcggagg gtgtgcggtg	120
30	tggcgggctt cgtgatgcct gcttgttcta cggcacgttt gaaggcgcgc tgaaaggtct	180
	ggtcatacat gtgatggcga cgcacgacac cgctccgtgg atcggtcgaa tgcgtgtgct	240
35	gcgcaaaaac ccagaaccac ggccaggaat gcccggcgcg cggatacttc cgctcaaggg	300
40	<210> 805 <211> 500 <212> DNA <213> Streptococcus pneumoniae	
	<400> 805 tgaggaaggt agtaaggga acaatatcaa actgaccatt gatttggcct tccaagatag	60
	cgtggatgct ttactgaaaa gttatttcaa ttctgagcta gaaaatgggt gagccaagta	120
45	ttctgaaggt gtctatgcag tcgcccttaa cccaaaaaca ggtgcgggtt tgtctatgtc	180
	agggattaaa catgacttga aaacaggaga gttgacgcct gattccttgg gaacggtaac	240
	caatgtcttt gttccagggt cggttgtcaa ggccggcgacc atcagctccg gttgggaaaa	300
50	tggagtctta tcagggaacc agaccttgac agaccaaccg attgtcttcc aagggttcagc	360
	tccgattaat tcttggtata ctcaagccta cgattcattc ccgattacag ctgtggaggc	420
55	cttgaggtat tcttctaata cctatatggt tcaaacggct ttgggcatta tgggtcagac	480
	ctatcaaccc aatatgtttg	500

EP 1 770 171 A1

5 <210> 806
 <211> 565
 <212> DNA
 <213> Staphylococcus epidermidis

10 <400> 806
 tagcaataca atcgcacata cattaataga gaaaaagaaa aaagatggca aagatattca 60
 actaactatt gatgctaaag ttcaaaagag tattttataac aacatgaaaa atgattatgg 120
 ctcaggtact gctatccacc ctcaaacagg tgaattatta gcaottgtaa gcacaccttc 180
 atatgacgtc tatccattta tgtatggcat gagtaacgaa gaatataata aattaaccga 240
 15 agataaaaaa gaacctctgc tcaacaagtt ccagattaca acttcaccag gttcaactca 300
 aaaaatatta acagcaatga ttgggtttaa taacaaaaca ttagacgata aaacaagtta 360
 taaaatcgat ggtaaagggt ggcaaaaaga taaatcttgg ggtggttaca acgttacaag 420
 20 atatgaagtg gtaaagtgta atatcgactt aaaacaagca atagaatcat cagataacat 480
 tttctttgct agagtagcac tcgaattagg cagtaagaaa tttgaaaaag gcatgaaaaa 540
 actaggtggtt ggtgaagata tacca 565

25 <210> 807
 <211> 524
 <212> DNA
 30 <213> Streptococcus pneumoniae

<400> 807
 tgaagatggc agcaagagct tgctgggaac ttctggaatg gagagtctct tgaacagtat 60
 tcttgcaggg acagacggca ttattaccta tgaaaaggat cgtctgggca atattgtacc 120
 35 cggaacagaa ctggtatcgc aacaaactgt ggatggcaag gatgtttata caacattgtc 180
 tagtccgcta caatctttca tggaaaactca gatggatgcc tttctagaaa aagtaaaagg 240
 taagtatatg accgcgacct tggtcagtgc aaagaccggt gaaattctcg ctaccacca 300
 40 acgacctacc ttaaatgcag atactaaaga aggaatcact gaggactttg tttggcgtga 360
 tattctttat caaagtaact atgaaccagg atcagccttt aaggatcatga tgtagcttc 420
 45 ttctattgat aataatacct tccaagtgg agaatacttc aatagcagtg aattcaaaat 480
 agcggatgag acgactcgag attgggatgt taatgagggt ttga 524

50 <210> 808
 <211> 715
 <212> DNA
 <213> Staphylococcus aureus

55 <400> 808
 agagatgaat gcaggaacag ttttagatcc acaaatgata aaaaatgaag atgtcagtga 60
 aaaagagtat gcagcagttt ctcagcaact ttccaaatta ccaggtgtta acacgtctat 120

EP 1 770 171 A1

ggattgggat agaaaatata catatggcga tactttaaga ggtatattcg gagatgtatc 180
 5 gacacctgct gaaggatattc caaagaatt gacagaacat tacttatcca aaggatattc 240
 acgcaatgat cgtgttgga aatcttacct agaatatcaa tatgaagatg tattgcgtgg 300
 taagaagaaa gaaatgaaat acacaacgga caaatctggt aaagttacat cttcagaagt 360
 10 gttaaatcct ggcgctcgcg gtcaagattt gaaattaacg atcgatatag atcttcaaaa 420
 agaagtagaa gcattattag ataaacaaat taagaagctt cgcagtcaag gtgccaaaga 480
 tatggataat gcaatgatgg ttgtacaaaa tcttaaaaat ggagacattc ttgcgcttgc 540
 15 cggaagcag attaataaga gtggtaaaat gactgattat gacattggta cgtttacttc 600
 tcaatttgcg gttggatctt ctgtaaaagg tggaacatta ttagccggtt atcagaataa 660
 agctatcaaa gttggagaaa caatggtcga tgaaccatta catttccaag gtggt 715
 20
 <210> 809
 <211> 623
 <212> DNA
 <213> Enterococcus faecalis
 25
 <400> 809
 caaacaagaa ttagccgaag cgaagaaaac agctactaca tttttaaacg tattgtcaaa 60
 acaggaattt gataagttac cgtccgttgt tcaagaagct agcttaaaga aaaatggcta 120
 30 tgatactaaa tctgttggtg aaaaatacca agcaatttat tcagggattc aagcagaagg 180
 agtcaaagct agtgatgttc aagtcaaaaa ggcgaaagac aatcaatata catttaccta 240
 taaattatcg atgagcactc ctttaggcga aatgaaagat ttgtcttata aatcaagtat 300
 35 cgccaagaaa ggcgatacct accaaatcgc ttggaagccg tctttaattt ttccagatat 360
 gtcaggaaat gataaaattt cgattcaagt agataatgcc aaacgtggag aaattgtcga 420
 tcgtaatggg agtgggctag caattaacaa agtgtttgac gaagtgggcg tagtgccctg 480
 40 caaactcggg tctggcgcag aaaaaacagc caatatcaaa gcttttagtg ataagttcgg 540
 cgtttctggt gatgaaatca atcaaaagtt aagccaagga tgggtccaag cagactcctt 600
 tgtaccaatc acagttgctt ctg 623
 45
 <210> 810
 <211> 660
 <212> DNA
 <213> Enterococcus faecium
 50
 <400> 810
 tacagatgca gacggtgtag agaaaaaagt tctgatcgaa catgaagttc aaaatggcaa 60
 agatatcaaa ttgacaatcg atgcgaaggc acaaaaaaca gcttttgaca gtctaggagg 120
 55 aaaagctgga tcaactggtg cgacaacgcc aaaaaccggt gatcttcttg cgcttgctag 180

EP 1 770 171 A1

	ctctccaagc tatgatccaa acaaaatgac aaacgggatc tcacaagaag attacaaagc	240
	ttatgaagaa aatcctgaac agccattcat cagccgattt gcgacagggt atgctcctgg	300
5	atctacgttt aaaaatgatta cagcagcaat cgggtctcgac aacggcacta tcgatccaaa	360
	tgaagtgttg acgatcaacg ggcttaaatg gcaaaaagac agttcttggg gatcttatca	420
	agtaacgcgt gtcagtgatg tatcacaagt agacttaaaa actgctttga tctattccga	480
10	taatatatat acggcccaag aaacgttgaa aatgggtgag aaaaaatttc gtacaggctt	540
	agataaattc atttttggtg aagacottga tttgccaatt agtatgaatc cagcacaat	600
	ttctaatagaa gatagcttta actcagatat cttgctagct gatactggat atggacaggg	660
15		
	<210> 811	
	<211> 522	
	<212> DNA	
	<213> Enterococcus faecalis	
20		
	<400> 811	
	gccgggtgtat cactaaagga aaaaacagct tctctatatg aaggaagcca agtggtaaaa	60
	gctaagcgag gatcaatttt agatcgatat ggtaatccaa ttgcagaaga tgctacttcc	120
25	tattcgttat atgtcgtatt atcaaaaaaa tatacgggac aaaataatga aaagctatac	180
	gcggagaaaa aagacttcga tgatattgct gaaattttag cgaaatatac caaactagac	240
	aaaaaaacag cattgaaata cttgaataat gggatccatg aagatgggtc aacacaatat	300
30	caagtggaat ttggtacggg tgggtcaaac atcaccttgg aaacacgcca aaaaattgaa	360
	gcagatttga aaaagaaaaa aatttcaggt gtttatttca atgaacatcc agccagatta	420
	tatcccaatg gtcagtttgc ttctcacttt attggctata caaaagcagc caatccagat	480
35	gatgataaag aaggcttagt aggagcaatg ggactagaac ag	522
	<210> 812	
	<211> 332	
	<212> DNA	
	<213> Staphylococcus aureus	
	<400> 812	
	taataaaaacg tatgaaatat catctgcaga atgggaagtt atgaatatca tttggatgaa	60
45	aaaatatgca agtgcgaaata atataataga agaaatacaa atgcaaaagg actggagtcc	120
	aaaaaccatt cgtacactta taacgagatt gtataaaaag ggatttatag atcgtaaaaa	180
	agacaataaa attttttaat attactctct tgtagaagaa agtgatataa aatataaaac	240
50	atctaaaaac tttatcaata aagtctacaa aggcgggtttc aattcacttg tcttaaactt	300
	tgtagaaaaa gaagatctat cacaagatga aa	332
55		
	<210> 813	
	<211> 530	

EP 1 770 171 A1

<212> DNA
<213> Streptococcus pneumoniae

<400> 813

5 cttggttagc gattcagtta gaacaaaaag caaccaagca agaaatcttg acctactata 60
taaataaggt ctacatgtct aatggcaact atggaatgca gacagcagct caaaactact 120
atggtaaaga cctcaataat ttaagtttac ctacagttagc cttgctggct ggaatgcctc 180
10 aggcacccaaa ccaatatgac ccctattcac atccagaagc agcccaagac cgccgaaact 240
tggtcttatac tgaatgaaa aatcaaggct acatctctgc tgaacagtat gagaaagcag 300
tcaatacacc aattactgat ggactacaaa gtctcaaatac agcaagtaat taccctgctt 360
15 acatggataa ttacctcaag gaagtcatac atcaagttga agaagaaaca ggatataacc 420
tgctcacaac tgggatggat gtctacacaa atgtagacca agaagctcaa aaacatctgt 480
gggatattta caatacagac gaatacgttg cctatccaga cgatgaattg 530
20

<210> 814
<211> 355
<212> DNA
<213> Staphylococcus aureus

<400> 814

25 agcaagttga aatatctatg gctgaatggg atgttatgaa tataatatgg gataaaaaat 60
cagtatcagc taatgaaatt gtagttgaaa ttcaaaaata taaagaagtt agcgataaaa 120
30 cgattagaac attaatcaca agactatata aaaaagagat tataaaacga tacaatcag 180
agaatattta tttttactca tcaaatatta aagaagacga tattaaaatg aaaactgcta 240
aaacctttct taataaactg tatggagggg acatgaaaag tttagtgtctg aattttgcga 300
35 aaaatgaaga attaaataac aaagaaattg aagaattgcg agacatttta aatga 355

<210> 815
<211> 702
<212> DNA
<213> Escherichia coli

<400> 815

40 acatcgaact ggatctcaac agcggtaaga tccttgagag ttttcgcccc gaagaacgtt 60
45 ttccaatgat gagcactttt aaagttctgc tatgtggtgc ggtattatcc cgtgttgacg 120
ccgggcaaga gcaactcggc cgccgcatac actattctca gaatgacttg gttaagtact 180
caccagtcac agaaaagcat cttacggatg gcatgacagt aagagaatta tgcagtgtctg 240
50 ccataaccat gagtataaac actgctgcca acttacttct gacaacgatc ggaggaccga 300
aggagctaac cgcttttttg cacaacatgg gggatcatgt aactcgcctt gatcgttggg 360
aaccggagct gaatgaagcc ataccaaacg acgagcgtga caccacgacg cctgcagcaa 420
55 tggcaacaac gttgcgcaaa ctattaactg gcgaactact tactctagct tcccggcaac 480

EP 1 770 171 A1

aattaataga ctggatggag gcggataaag ttgcaggacc acttctgcgc tcggcccttc 540
 5 cggctggctg gtttattgct gataaatctg gagccggtga gcgtgggtct cgcggtatca 600
 ttgcagcact ggggccagat ggtaagccct cccgtatcgt agttatctac acgacgggga 660
 gtcaggcaac tatggatgaa cgaaatagac agatcgctga ga 702
 10 <210> 816
 <211> 596
 <212> DNA
 <213> Klebsiella oxytoca
 15 <400> 816
 tgtgcagcac cagtaaagtg atggccgccc cgcggtatt aaaacagagc gaaagcaata 60
 aagaggtggt aaataaaagg ctggagatta acgcagccga tttggtggtc tggagtccga 120
 20 ttaccgaaaa acatctccag agcggaatga cgctggctga gctaagcgcg gcgacgctgc 180
 aatatagcga caatacggcg atgaatctga tcatcggtta ccttggcggg ccggaaaaag 240
 tcaccgcctt cgcgcgcagt atcggcgatg ccacctttcg tctcgatcgt acggagccca 300
 25 cgctgaatac cgccatcccg ggcgatgagc gtgataccag cagccgctg gcgatggctg 360
 aaagcctacg caagctgacg cttggcgatg cgctgggcca acagcaacgc gccagttag 420
 tcacctggct gaaaggcaat accaccggcg ggcaaagcat tcgcgcgggc ctgcctgaaa 480
 30 gctgggtggt cggcgataaa accggcgccc gagattacgg caccaccaat gatattgcgg 540
 ttatctggcc ggaagatcac gtcgcgctgg tattagtcac ctactttacc cagccg 596
 35 <210> 817
 <211> 558
 <212> DNA
 <213> Enterococcus faecium
 40 <400> 817
 acagtgccag ttcttatcgt ttattgcaag ccgatgaaaa tacaaaaagt ctattattgc 60
 gtcaactaat ttcatatatt ttgagttgga gcgtgatctt cttagctcgt tcagtcaaac 120
 tacactatatt acttcacct aaaatagcag gatacgggtt agccttatcg attttctttt 180
 45 tagtattagt aagaataggg atattcgggtg tcaactgtcaa cggcgcacaa cgttggatct 240
 ctctgttttg cattcaattc cagccttctg aactggcaaa tctttttttg attttttatt 300
 taagctgggt ttttcgtgac ggaaatagta gcccaaaaga tctaaaaaaa ccattcctga 360
 50 ttacagtagg tataactttt ctgattttat ttcagccaaa gattgctgga gcattgatga 420
 tcctttcgat tgcgtgggtc atattttggg cagcggcggt tccattttaa aaagggatct 480
 atctaatacgt tactttttct gcattgctga ttggagcagc aggcggggta ttatatttag 540
 55 gaaataaagg ttggcttc 558

EP 1 770 171 A1

<210> 818
 <211> 750
 <212> DNA
 5 <213> *Staphylococcus aureus*

 <400> 818
 ctcacccaaa tggagattta ttacaattaa cgaaatgggc agaaacaaag aaattaactg 60
 gatggtagcg gcgaagaatc gctgtaggtc gtgacgggtga agttcagggg gttgcgcaat 120
 10 tacttttttaa aaaagtacct aaattaccgt atacgctatg ttatatattca cgtgggttttg 180
 ttgttgatta tagtaataaa gaagcgttaa atgcattggt agacagtgcg aaagaaattg 240
 15 ctaaagctga gaaagcgtat gcaattaaaa tcgatacctga tgttgaagtt gataaaggta 300
 cagatgcttt gcaaaatttg aaagcgtttg gttttaaaca taaaggattt aaagaagggt 360
 tatcaaaaga ctacatccaa ccacgtatga ctatgattac accaattgat aaaaatgatg 420
 20 atgagttatt aaatagtttt gaacgcgaa atcggtcaca agtgcgcttg gctttaaagc 480
 gaggtacgac agtagaacga tctgatagag aagggtttaaa aacatttgct gaattaatga 540
 aaatcactgg ggaacgcgat ggcttcttaa cgcgtgatat tagttacttt gaaaatattt 600
 25 atgatgcgtt gcatgaagat ggagatgctg aactatTTTT agtaaagttg gacccaaaag 660
 aaaatatagc gaaagtaa atcaagaattga atgaacttca tgccgaaata gctaaatggc 720
 agcagaagat ggaacatct gaaaagcaag 750
 30
 <210> 819
 <211> 363
 <212> DNA
 35 <213> *Proteus vulgaris*

 <400> 819
 acaacatttc gccaaacagc gacgattgca gtttcattaa tatctctatt ggtatctcca 60
 atgctatggg ctaacaccaa taatacgatt gaagagcaat taagtacgct tgaaaaatat 120
 40 agccaagggtc gtttaggtgt tgctttaatc aacacggaag ataattcaca aataacatat 180
 cgtggtgaag aacgttttgc gatggcaagt acaagtaagg ttatggctgt tgcggcagtt 240
 ttaaaagaga gtgaaaaaca agcgggatta ttagataaga atattacaat taaaaaatcc 300
 45 gacttagttg cttacagccc tattacagaa aaacatttag taacaggaat gtcttttagct 360
 caa 363

 50 <210> 820
 <211> 545
 <212> DNA
 <213> *Staphylococcus haemolyticus*

 <400> 820
 55 aatgatggct ttgaagtagt gttactaggt gtaaaagatg aaagcaataa agtattagct 60

EP 1 770 171 A1

	gctagtcttt tctctaaaat accgaccatg ggaagttatg tatattactc aaatcgaggc	120
	ccagtaatgg actattctga tttaggctta gttgattttt acttacgcga attagaaaag	180
5	tatttacatc aacaccaatg tttatacggtt aaaattgac catactggat ttatcaaatt	240
	tatgataaag atattaatcc acttgaagat agagagaaaa atgatgctat agttaatttg	300
	tttaaatacac atggatatga acaccatgga tttactactg aatatgacac atcaagtcaa	360
10	gcaagatgga tgggtggttag ctatctaaaa ggggaaacac ctgcttcatt aagaaaacaa	420
	tttgatagcc aacgtaaaag aaatattaat aaagcgataa actatggggg gaaagtaaga	480
	ttccttggtg gagatgagtt tcatatatc ttagacttat accgtgaaac agaagcaaga	540
15	acagg	545
	<210> 821	
	<211> 633	
20	<212> DNA	
	<213> Pseudomonas aeruginosa	
	<400> 821	
	ccatcaggca acagaatgat acctaaatca ttagtgggcg cagtttttcc ggctttgata	60
25	cccgaagtac cagtttttatg tgcgaccaca gtaccagctg gtaacaaacc ttttaaccgc	120
	tctggctctg tgggtggtttc gaccatccac ttccataaca aagcctgcga ggtttcagac	180
	agctgtgttt tttgctcaaa ctttttcagg atctctgcag cacctttcat cgagggtccag	240
30	ttttgatact gcacctgac atcggcgtgc atctgcgctt catttgcgac cacagcggtc	300
	tcctttatac ccatagactg gatatagtca tgcaaagcag ctgggtccacc aaccagttca	360
	aataacaaat cacaggccac gttatcgctg tgcgagaccg agtattgcag cagttgctgc	420
35	actggaacac taaactcgtc tccctgatac gctttcatta tcggagccca ggtattctgt	480
	aaaacottag ccctgtttac gataacggtc tgatttaaata ccaactttcc ctgatcaacc	540
40	tgatgcagta ccaacatagc taaatgcaat ttaaatacac tttgcattgg gaatttttca	600
	aaaggattaa tcagtaaagg ttccagatcg tca	633
	<210> 822	
	<211> 340	
45	<212> DNA	
	<213> Klebsiella oxytoca	
	<400> 822	
	cttactatcg gagctgggtca ccggtttatc cggcagggac tcatcgccag tattccaacc	60
50	ccagcatagg cctgttttgtt cacctggccg caaatagtct gggccagcca tttgagcaac	120
	tgatgagcca gaccctgctg cccaagctgg gtttgacca cacctatatc cagggtgccg	180
	agtcggccat ggcgaaactat gcctacggct attcgaagga agataagccc atccgggtca	240
55	ctccggggct gctggcggcc gaggcttacg ggatcaagac cggtcggcg gatctgctga	300

EP 1 770 171 A1

	agttttgccga ggcaaacatg gggatatcagg gagatgccct	340
5	<210> 823 <211> 768 <212> DNA <213> <i>Proteus vulgaris</i>	
10	<400> 823 tcactcatta accattgctg aaatatttcc attgatgctg tcattggctt tgattttaaa	60
	tatgttagcc aatattttcc catttcaact totattttaa agggttgcac taactgacca	120
	ttttcaattt ctcttgaaaa catTTTTgct ggtgctaattg caactcctcc ttcataaata	180
15	gcgctttcaa tcattaagcg tgaagagtca aaaatagagc cggttatttt tataggcgac	240
	atatttgctt tttcaaacca ttgcaaccac tcactcttctc gataagagcg atacaagttt	300
	tcattttatta gatcagtttg atgttgtaaa cgtttcgccg taccgatga acacaatacc	360
20	gttaatgggtg cagaaaataa tgctttgtta tgagttaatg gccataaacc ttcaccaaatt	420
	cgaatagcaa aatctaattc ttcagtagcc aaattgacca cattattatt tgttcttaaa	480
	ttcacttcta ttcttgata taactgcta aattcgcca acctaggtaa taaccaccca	540
25	accgcaaattg taccgacagc tgcaattgaa acaacatcgc gatattcacc gcgttcaaatt	600
	tgtttaaata cacgctcaat atcactaaaa gccgttggtta atacagaaaa taagatttga	660
30	gcatcatccg tcattttctaa acctogaggt aagcgcttaa aaagaataac gccaaagccgc	720
	tcttctaaca ttctcacttg ttggctaaca gcaccttgag tgacatac	768
35	<210> 824 <211> 568 <212> DNA <213> <i>Enterococcus faecium</i>	
40	<400> 824 ttatctgttt tgttactgct tacactagta gtccgctttt tttcgattga atttgtccat	60
	ggattttcgt ctgcaaaaca gacctcaacc gtaaaaaagg tagatccgaa aagtgtccct	120
	accacactaa atgtggcttt gattgggttcg gatgcccggt cgaaagaaga aaatggtcgc	180
45	tcagattcac ttatggttgc acaatacgc cagaaaacac aacaagcaaa actaatctct	240
	atcatgagag actcatatgt cgatatacca ggttacggaa tggataaaat caatgcagcg	300
	tactcttacg gaggaattga tttattgaac caaacattaa aggaaaattt caaatttgaa	360
50	gccccgtatt atgcaagtat cacatttcaa gattttatcg attgcgtcaa tgaactgttt	420
	cctgatggag taaagattga tgcagaaaaa tcttttagatt tagatggcgt atatataaaa	480
	aaagggaagc aagtaatgga tggcaatacg ttactgcagt atgctcgatt ccgtgaagac	540
55	gaagaagggg actttgggag gattagaa	568

EP 1 770 171 A1

<210> 825
 <211> 763
 <212> DNA
 5 <213> Staphylococcus aureus

 <400> 825
 tgacttcgga tgagttcaat gcgtttacaa caaagcattt ttcacattac acacaatcag 60
 ctattcatta caatcataga gttgatttaa aaggcgatgt gcatcttgta ggggttaaag 120
 10 atgacaatgg tcaagtgatt gcaggatgct tattgacaga agcacgcaca cttaaatttt 180
 tcaaatatTT ttatacacat cgcgggccag tgatggatta tacaatcaa tcattagtag 240
 15 catttttctt taaagcatta acgtcatatt taaagaaaca caattgttta tatgtccttg 300
 tagatccata ttttaattgaa aattttacgca atgcagacgg tgaaattgtt aaatcttatg 360
 ataaccgagc atttggttaga acaatggata aattagggtta taaacaccaa ggtttccttg 420
 20 taggttatga ttcaatgagc caaatccggt ggctgtcagt gtttagattta aaagataaga 480
 ctgaagacca acttttaaaa gaaatggatt atcaaacgag acgtaatat taaaaaacat 540
 atgatattgg tgtcaaaact aaaacgttaa cgattgatga aacgcaaact tttttcgact 600
 25 tattccatat ggctgaggaa aagcacgggt tcaaattccg tgagttacca tactttgaag 660
 aaatgcaaaa gttatacgat gaccacgcca tgttaaagtt ggcgatatatt gatttaaacg 720
 agtatTTaaa aacgtttacaa ttaaagcaac aacaattaac agc 763
 30
 <210> 826
 <211> 552
 <212> DNA
 35 <213> Staphylococcus epidermidis

 <400> 826
 aagtataatc agttcattgc tcacgatatg tgtaattttt ttagtgagaa tgctctatat 60
 aaaatatact caaaatatta tgtcacataa gatttggtta ttagtgctcg tctccacgtt 120
 40 aattccatta ataccatttt acaaaatatc gaattttaca ttttcaaaag atatgatgaa 180
 tcgaaatgta tctgacacga cttcttcggt tagtcatatg ttagatggtc aacaatcatc 240
 tgttacgaaa gacttagcaa ttaatgttaa tcagtttgag acctcaaata taacgtatat 300
 45 gattcttttg atatgggtat ttggtagttt gttgtgctta ttttatatga ttaaggcatt 360
 ccgacaaatt gatgttatta aaagttcgtc attggaatcg tcatatctta atgaacgact 420
 taaagtatgt caaagtaaga tgcagttcta caaaaagcat ataacaatta gttatagttc 480
 50 aaacattgat aatccgatgg tatttggttt agtgaaatcc caaattgtac taccaactgt 540
 cgtagtcgaa ac 552
 55
 <210> 827
 <211> 810

EP 1 770 171 A1

<212> DNA
<213> Staphylococcus aureus

<400> 827

5	tgcttttagtt ttaagtgcac gtaattcaaa cagttcacat gccaaagagt taaatgattt	60
	agaaaaaaaa tataatgctc atattgggtgt ttatgcttta gatactaaaa gtggtaagga	120
	agtaaaattt aattcagata agagatttgc ctatgcttca acttcaaaag cgataaatag	180
10	tgctattttg ttagaacaag taccttataa taagttaaata aaaaaagtac atattaacaa	240
	agatgatata gttgcttatt ctctattttt agaaaaatat gtaggaaaag atatcacttt	300
	aaaagcactt attgaggctt caatgacata tagtgataat acagcaaaca ataaaattat	360
15	aaaagaaatc ggtggaatca aaaaagttaa acaacgtcta aaagaactag gagataaagt	420
	aacaaatcca gttagatatg agatagaatt aaattactat tcaccaaaga gcaaaaaaga	480
	tacttcaaca cctgctgctt tcggtgaagac tttaaataaaa cttatcgcaa atggaaaatt	540
20	aagcaaagaa aacaaaaaat tcttacttga tttaatgtta aataataaaa gcggagatac	600
	tttaattaaa gacggtgttc caaaagacta taagggttgct gataaaagtg gtcaagcaat	660
	aacatatgct tctagaaatg atgttgcttt tgtttatcct aagggccaat ctgaacctat	720
25	tgttttagtc atttttacga ataaagacaa taaaagtgat aagccaatg ataagttgat	780
	aagtgaacc gccaaagagt taatgaagga	810

<210> 828
<211> 565
<212> DNA
<213> Plasmid RGN238

<400> 828

35	tttgaaggaa ctgaagggtg ttttttactt tacgatgcat ccacaaacgc tgaaattgct	60
	caattcaata aagcaaagtg tgcaacgcaa atggcaccag attcaacttt caagatcgca	120
	ttatcactta tggcatttga tgcggaaata atagatcaga aaaccatatt caaatgggat	180
40	aaaaccccca aaggaatgga gatctggaac agcaatcata caccaaagac gtggatgcaa	240
	ttttctgttg tttgggtttc gcaagaaata acccaaaaaa ttagattaaa taaaatcaag	300
	aattatctca aagattttga ttatggaaat caagacttct ctggagataa agaaagaaac	360
45	aacggattaa cagaagcatg gctcgaaagt agcttaaaaa tttcaccaga agaacaaatt	420
	caattcctgc gtaaaattat taatcacaat ctcccagtta aaaactcagc catagaaaac	480
50	accatagaga acatgtatct acaagatctg gataatagta caaaactgta tgggaaaact	540
	ggtgcaggat tcacagcaaa tagaa	565

<210> 829
<211> 226
<212> DNA

EP 1 770 171 A1

<213> Klebsiella pneumoniae
 <400> 829
 5 ggcttacggg atcaagaccg gctcggcgga tctgctgaag tttgccgagg caaacatggg 60
 gtatcaggga gatgccgcgg taaaaagcgc gatcgcgctc acccacaccg gtttctactc 120
 ggtgggagac atgaccacagg gactgggctg ggagagttac gcctatccgg tgaccgagca 180
 10 gacattgctg gcgggtaacg caccggcggt gagcttccag gccaat 226
 <210> 830
 <211> 502
 <212> DNA
 15 <213> Proteus mirabilis
 <400> 830
 gcggtaaagt ccttgagagt ttctgccccg aagaacgttt tccaatgatg agcactttta 60
 aagtcttctg atgtggtgcg gtattatccc gtgttgacgc cgggcaagag caactcggtc 120
 20 gccgcataca ctattctcag aatgacttgg ttaagtactc accagtcaca gaaaagcatc 180
 ttacggatgg catgacagta agagaattat gcagtgtgct cataaccatg agtgataaca 240
 ctgcgggcaa cttacttctg acaacgatcg gaggaccgaa ggagctaacc gcttttttgc 300
 25 acaacatggg ggatcatgta acccgccttg atcgttggga accggagctg aatgaagcca 360
 taccaaaacg cgagcgtgac accacgacgc ctgcagcaat ggcaacaacg ttgcgcaaac 420
 30 tattaactgg cgaactactt actctagctt cccggcaaca attaatagac tggatggagg 480
 cggataaagt tgcaggacca ct 502
 <210> 831
 35 <211> 391
 <212> DNA
 <213> Staphylococcus warneri
 <400> 831
 40 agttgaaaat gaaatatgta taagaacttt aatagatgat gattttcctt tgatgttaaa 60
 atggttaact gatgaaagag tattagaatt ttatggtggt agagataaaa aatatacatt 120
 agaatcatta aaaaaacatt atacagagcc ttgggaagat gaagttttta gagtaattat 180
 45 tgaatataac aatgttccta ttggatatgg acaaatatat aaaatgtatg atgagttata 240
 tactgattat cattatccaa aaactgatga gatagtctat ggtatggatc aatttatagg 300
 agagccaaat tattggagta aaggaattgg tacaagatat attaaattga tttttgaatt 360
 50 tttgaaaaaa gaaagaaatg ctaatgcagt t 391
 <210> 832
 <211> 380
 <212> DNA
 55 <213> Pseudomonas aeruginosa

EP 1 770 171 A1

	<400> 832	
	tcatttcgcac atgtaggctc ggccctgacc aagtccaatc catgcgggct gctcttgatc	60
5	ttttcgggtcg tgagttcggg gacgtagcca cctactccca acatcagccg gactccgatt	120
	acctcgggaa cttgctccgt agtaggacat tcacgcgcgt tgctgccttc gagcaagaag	180
	cggttgttgg cgctctcgcg gcttacgttc tgcccaagtt tgagcaggcg cgtagtgaga	240
10	tctatatcta tgatctcgca gtctccggcg agcaccgccg gcagggcatt gccaccgcgc	300
	tcaccaatct cctcaagcat gaggccaacg cgcttggtgc ttacgtgatc tacgtgcaag	360
	cggattacgg tgacgatccc	380
15	<210> 833	
	<211> 616	
	<212> DNA	
	<213> Escherichia coli	
20	<400> 833	
	gaccgatcac cctacgagga gactcgtaat ggcgctcggg tggatgacaa aaccgcgcgt	60
	acctggccgc cgttcgatcc cgcaacggcc gggacttacc gtgggttcgg cctgctgaat	120
25	cagtttctgg ttcaagcccc cggcgcgcgg cgcagcgcg cccccgatgc atcgatggtc	180
	gcggttggtc cactggctga aacgctgacg gagcctcaca agctcgggtca cgccttgggg	240
	gaagggtcgc ccgtcgagcg gttcgttcgc cttggcgggg aggcctgct gttgggtgcg	300
30	ccgctaaact ccgttaccgc attgcactac gccgaggcgg ttgccgatat ccccaacaaa	360
	cggcggggtga cgtatgagat gccgatgctt ggaagcaacg gcgaagtcgc ctggaaaacg	420
	gcacgcgatt acgattcaaa cggcattctc gattgctttg ctatcgaagg aaagccggat	480
35	gcggtcgaaa ctatagcaaa tgcttacgtg aagctcggtc gccatcgaga aggtgtcgtg	540
	ggctttgctc agtgctacct gttcgacgcg caggacatcg tgacgttcgg cgtcacctat	600
	cttgagaagc atttcg	616
40	<210> 834	
	<211> 707	
	<212> DNA	
	<213> Escherichia coli	
45	<400> 834	
	aagtttcatt gccagacggg acttctgcaa tcgtcaaggg attgaaacct atagaagaca	60
	ttgctgatga actgcgcggg gccgactatc tggatatggc caatgggagg ggagcagtc	120
50	ggttgctcgg tcgtgagaac aatctgatgt tgctcgaata tgccggggag cgaatgctct	180
	ctcacatcgt tgccgagcac ggcgactacc aggcgaccga aattgcagcg gaactaatgg	240
	cgaactgtat gcccgcatct gaggaccctt gccttctgcc cttctccga tccgggatcg	300
55	ctttgcagct ttgtttcagc gggcgcgcg atgatcaaaa cgcaggttgt caaactgact	360

EP 1 770 171 A1

	acgtccacgc ggcgattata gccgatcaaa tgatgagcaa tgcctcgaa ctgcgtgggc	420
	tacatggcga tctgcatcat gaaaacatca tgttctccag tcggggctgg ctggtgaaag	480
5	atcccgtcgg tctggtcggt gaagtgggct ttggcgccgc aaatatgttc tacgatccgg	540
	ctgacagaga cgacctttgt ctcgatccta gacgcattgc acagatggcg gacgcattct	600
	ctcgtgcgct ggacgtcgat ccgcgtcgcc tgcctgaaca ggcgtagct tatgggtgcc	660
10	tttccgcagc ttggaacgcg gatggagaag aggagcaacg cagtcta	707
	<210> 835	
	<211> 545	
15	<212> DNA	
	<213> Enterococcus faecalis	
	<400> 835	
	gccgaagtat cgactcaact atcagaggta gttggcgta tcgagcgcca tctcgaaccg	60
20	acgttgctgg ccgtacattt gtacggctcc gcagtggatg gcggcctgaa gccacacagt	120
	gatattgatt tgctggttac ggtgaccgta aggcttgatg aaacaacgcg gcgagctttg	180
	atcaacgacc ttttgaaaac ttcggcttcc cctggagaga gcgagattct ccgcgtgta	240
25	gaagtcacca ttgttggtgca cgacgacatc attccgtggc gttatccagc taagcgcgaa	300
	ctgcaatttg gagaatggca gcgcaatgac attcttgag gtatcttcga gccagccacg	360
	atcgacattg atctggctat cttgctgaca aaagcaagag aacatagcgt tgccttggtgta	420
30	gggccagcgg cggaggaact ctttgatccg gttectgaac aggatctatt tgaggcgcta	480
	aatgaaacct taacgctatg gaactcgccg cccgactggg ctggcgatga gcgaaatgta	540
35	gtgct	545
	<210> 836	
	<211> 515	
	<212> DNA	
40	<213> Escherichia coli	
	<400> 836	
	gcaggtcaca ttgatacaca aaattctagc tcgggcagat gagcgaaatc tgccgctctg	60
	gatcgggtggg ggctgggcga tcgatgcacg gctagggcgt gtaacacgca agcacgatga	120
45	tattgatctg acgtttcccg gcgagaggcg cggcgagctc gaggcaatag ttgaaatgct	180
	cggcgggcgc gtcattggagg agttggacta tggattctta gcggagatcg gggatgagtt	240
	acttgactgc gaacctgctt ggtgggcaga cgaagcgtat gaaatcgcg aggctccgca	300
50	gggctcgtgc ccagaggcgg ctgagggcgt catcgccggg cggccagtcc gttgtaacag	360
	ctgggaggcg atcatctggg attactttta ctatgccgat gaagtaccac cagtggactg	420
	gcctacaaag cacatagagt cctacaggct cgcattgcacc tcaactcggg cggaaaaggt	480
55	tgagggtcttg cgtgccgctt tcaggctcgc atatg	515

EP 1 770 171 A1

5 <210> 837
 <211> 502
 <212> DNA
 <213> Staphylococcus aureus

10 <400> 837
 gctattggtg tttatggctc tcttggctcg cagactgatg ggccctattc ggatattgag 60
 atgatgtgtg tcatgtcaac agaggaagca gagttcagcc atgaatggac aaccggtgag 120
 tggaaagggtg aagtgaattt tgatagcgaa gagattctac tagattatgc atctcaggtg 180
 gaatcagatt ggccgcttac acatgggtcaa tttttctcta ttttgccgat ttatgattca 240
 15 ggtggatact tagagaaagt gtatcaaact gctaaatcgg tagaagccca aacgttccac 300
 gatgcgattt gtgcccttat cgtagaagag ctgtttgaat atgcaggcaa atggcgtaat 360
 attcgtgtgc aaggaccgac aacatctcta ccatacctga ctgtacaggt agcaatggca 420
 20 ggtgccatgt tgattggtct gcatcatcgc atctgttata cgacgagcgc ttcgggtctta 480
 actgaagcag ttaagcaatc ag 502

25 <210> 838
 <211> 452
 <212> DNA
 <213> Pseudomonas aeruginosa

30 <400> 838
 gctaaatcga tctcatatcg tcgagtggtg gggcggagaa gaagcacgcc cgacacttgc 60
 tgacgtacag gaacagtact tgccaagcgt ttttagcgcaa gagtccgtca ctccatacat 120
 tgcaatgctg aatggagagc cgattgggta tgcccagtcg tacgttgctc ttggaagcgg 180
 35 ggacggatgg tgggaagaag aaaccgatcc aggagtacgc ggaatagacc agtcactggc 240
 gaatgcacaa caactgggca aaggccttggg aaccaagctg gttcgagcac tggttgagtt 300
 gctgttcaat gatccccgag tcaccaagat ccaaacggac ccgtcgccga gcaacttgcg 360
 40 agcgatccga tgctacgaga aagcgggggt tgagaggcaa ggtaccgtaa ccaccccaga 420
 tggccagcc gtgtacatgg ttcaaacacg cc 452

45 <210> 839
 <211> 565
 <212> DNA
 <213> Escherichia coli

50 <400> 839
 ctcatattggc tcaaaggctg aggtgtggct tgccccgagg tgatcaactg gcaggaggaa 60
 caggaggggtg catgcttggg gataacggca attccgggag taccggcggc tgatctgtct 120
 ggagcggatt tgctcaaagc gtggccgtca atggggcagc aacttggcgc tgttcacagc 180
 55 ctatcggttg atcaatgtcc gtttgagcgc aggtgtcgc gaatgttcgg acgcgccgtt 240

EP 1 770 171 A1

	gatgtggtgt cccgcaatgc cgtcaatccc gacttcttac cggacgagga caagagtacg	300
5	ccgcagctcg atcttttggc tcgtgtcgaa cgagagctac cgggtcggct cgaccaagag	360
	cgcaccgata tggttgtttg ccatggtgat ccttgcacgc cgaacttcat ggtggaccct	420
	aaaactcttc aatgcacggg tctgatcgac cttgggcggc tcggaacagc agatcgctat	480
10	gccgatttgg cactcatgat tgctaacgcc gaagagaact gggcagcgcc agatgaagca	540
	gagcgcgcct tcgctgtcct attca	565
15	<210> 840 <211> 707 <212> DNA <213> Staphylococcus aureus	
20	<400> 840 gagaatatca ccggaattga aaaaactgat cgaaaaatac cgctgcgtaa aagatacggg	60
	aggaatgtct cctgctaagg tatataagct ggtgggagaa aatgaaaacc tatattttaa	120
	aatgacggac agccggtata aagggaccac ctatgatgtg gaacgggaaa aggacatgat	180
25	gctatggctg gaaggaaagc tgctgttcc aaaggtcctg cactttgaac ggcacatggg	240
	ctggagcaat ctgctcatga gtgaggccga tggcgtcctt tgctcgggaag agtatgaaga	300
	tgaacaaagc cctgaaaaga ttatcgagct gtatgcggag tgcacaggc tctttcactc	360
30	catcgacata tcggattgtc cctatacgaa tagcttagac agccgcttag ccgaattgga	420
	ttacttactg aataacgac tgcccgatgt ggattgcgaa aactgggaag aagacactcc	480
	atttaaagat ccgcgcgagc tgtatgattt tttaaagacg gaaaagcccg aagaggaact	540
35	tgtcttttcc cacggcgacc tgggagacag caacatcttt gtgaaagatg gcaaagtaag	600
	tggctttatt gatcttggga gaagcggcag ggcggacaag tggatatgaca ttgccttctg	660
40	cgcccggtcg atcagggagg atatcgggga agaacagtat gtcgagc	707
45	<210> 841 <211> 329 <212> DNA <213> Pseudomonas aeruginosa	
50	<400> 841 cctgaccaag tccaatccat gcgggctgct ctgatcttt tcggtcgtga gttcggagac	60
	gtagccacct actcccaaca tcagccggac tccgattacc tcgggaactt gctccgtagt	120
	aggacattca tcgcgcttgc tgccttcgag caagaagcgg ttgttggcgc tctcgcggct	180
	tacgtttctgc ccaagtttga gcaggcgcgt agtgagatct atatctatga tctcgcagtc	240
	tccggcgagc accgcgggca ggccattgcc accgcgctca tcaatctcct caagcatgag	300
55	gccaacgcgc ttggtgctta cgtgatcta	329

EP 1 770 171 A1

	<210>	842	
	<211>	423	
	<212>	DNA	
5	<213>	Pseudomonas aeruginosa	
	<400>	842	
	tgcgatgctc	tatgagtggc taaatcgatc tcatatcgtc gagtgggtggg gcgagagaaga	60
10	agcacgcccc	acacttgctg acgtacagga acagtacttg ccaagcgttt tagcgcaaga	120
	gtccgtoact	ccatacattg caatgctgaa tggagagccg attgggtatg cccagtcgta	180
	cgttgctctt	ggaagcgggg acggatgggtg ggaagaagaa accgatccag gagtacgcgg	240
15	aatagaccag	tactggcgga atgcatcaca actgggcaaa ggcttgggaa ccaagctggt	300
	tcgagcactg	gttgagttgc tgttcaatga tcccagaggtc accaagatcc aaacggaccc	360
	gtcgccgagc	aacttgcgag cgatccgatg ctacgagaaa gcgggggtttg agaggcaagg	420
20	tac		423
	<210>	843	
	<211>	613	
	<212>	DNA	
25	<213>	Staphylococcus aureus	
	<400>	843	
	agatttgcca	gaacatgaat tacacgaggg caaaaaagaa gattgttatt taatggaata	60
30	tagatatgat	gataatgcca caaatgttaa ggcaatgaaa tatttaattg agcattactt	120
	tgataatttc	aaagtagata gtattgaaat aatcggtagt ggttatgata gtgtggcata	180
	tttagttaat	aatgaatata tttttaaaac aaaatttagt actaataaga aaaaaggtta	240
35	tgcaaaagaa	aaagcaatat ataatttttt aaatacaaat ttagaaacta atgtaaaaat	300
	tcctaataatt	gaatattcgt atattagtga tgaattatct atactagggt ataaagaaat	360
	taaaggaact	ttttaaacac cagaaattta ttctactatg tcagaagaag aacaaaattt	420
40	gttaaaacga	gatattgcca gttttttaag acaaatgcac ggtttagatt atacagatat	480
	tagtgaatgt	actattgata ataaacaaaa tgtattagaa gagtatatat tgttgcgtga	540
	aactatztat	aatgatttaa ctgatataga aaaagattat atagaaagtt ttatggaaaag	600
45	actaaatgca	aca	613
	<210>	844	
	<211>	424	
	<212>	DNA	
50	<213>	Staphylococcus aureus	
	<400>	844	
	atatcaggaa	agattggaaa tacggattct gttagaccac ttgaagttac ggttataaat	60
55	aggagtgaag	ttgtcccttg gcaatatcct caaaaagag aatttatata cggtgagtgg	120

EP 1 770 171 A1

	ctcaggggtg aatttgagaa tggacaaatt caggaaccaa gctatgatcc tgatttggtc	180
	attgttttag cacaagcaag aaagaatagt atttctctat ttggctctga ttcttcaagt	240
5	atacttgtct ccgtaccttt gacagatatt cgaagagcaa ttaaggattc ttgcccagaa	300
	ctaattgagg ggataaaagg tgatgagcgt aatgtaattt taaccctagc tcgaatgtgg	360
	caaacagtga ctactgggtga aattacctcg aaagatgtcg ctgcagaatg ggctatacct	420
10	cttt	424
	<210> 845	
	<211> 532	
15	<212> DNA	
	<213> synthetic construct	
	<400> 845	
	aagatacggg aggaatgtct cctgctaagg tatataagct ggtgggagaa aatgaaaacc	60
20	tatatattaaa aatgacggac agccggtata aagggaccac ctatgatgtg gaacgggaaa	120
	aggacatgat gctatggctg gaaggaaagc tgccctgttc aaaggctcctg cactttgaac	180
	ggcatgatgg ctggagcaat ctgctcatga gtgaggccga tggcgtcctt tgctcggaag	240
25	agtatgaaga tgaacaaagc cctgaaaaga ttatcgagct gtatgaggag tgcacaggc	300
	tctttcactc catcgacata tcggattgtc cctatacgaa tagcttagac agccgcttag	360
	ccgaattgga ttacttactg aataacgac tgcccgatgt ggattgcaa aactgggaag	420
30	aagacactcc atttaaagat ccgcgcgagc tgtatgattt tttaaagacg gaaaagcccg	480
	aagaggaact tgtcttttcc cacggcgacc tgggagacag caacatcttt gt	532
35	<210> 846	
	<211> 200	
	<212> DNA	
	<213> Staphylococcus aureus	
	<400> 846	
40	acacagtcaa aactttatta cttcaaaaca taatatagat aaaataatga caaatataag	60
	attaaatgaa catgataata tctttgaaat cggctcagga aaagggcatt ttacccttga	120
	attagtacag aggtgtaatt tcgtaactgc cattgaaata gaccataaat tatgcaaaac	180
45	tacagaaaat aaacttggtg	200
	<210> 847	
	<211> 510	
50	<212> DNA	
	<213> Enterococcus faecium	
	<400> 847	
	cgtttaccaa aggagaaggt gaccaatact ctgatataga gttctatata tttttgaaac	60
55	atagtataac ctcgaaactt gattcatcca actgggtgtt tgacgtagct ccgtacttga	120

EP 1 770 171 A1

	tgctttataa aaatgagtag ggaacagagg tagttatatt tgataatctt atacgtgggg	180
	aatttcattt cctttctgaa aaagatatga acataatccc ctcgttttaa gattcagggt	240
5	atattcctga tacgaaggct atgcttattt acgatgaaac agggcaatta gaaaattatt	300
	tatcagagat aagtgggtgca agaccaaata gacttactga agaaaatgct aattttttgt	360
	tgtgtaattt ctctaactta tgggtgatgg gaatcaacgt tctaaaaaga ggagaatatg	420
10	ctcgttcatt agaactctta tcacaacttc aaaaaaatac actacaactt atacgtatgg	480
	cagaaaaaaaa tgctgataat tggctaataa	510
15	<210> 848 <211> 227 <212> DNA <213> Staphylococcus aureus	
20	<400> 848 gtgattacag aaatgaaagc agggcacctg aaagatatcg ataaaccag cgaaccattt	60
	gaggtgatag gtaagattat accgaggtat gaaaacgaga attggacctt tacagaatta	120
	ctctatgaag cgccatattt aaaaagctac caagacgaag aggatgaaga ggatgaggag	180
25	gcagattgcc ttgaatatat tgacaatact gataaggtaa tatatct	227
30	<210> 849 <211> 708 <212> DNA <213> Staphylococcus aureus	
	<400> 849 gacagatttt cgatccctta atattgaaaa tctttatgct tatcaatttg aaaaaatagc	60
35	acttattgga ggtaatggta ctggcaaaac cacattactg aatatgattg ctcaaaaaac	120
	aaaaccagaa tctggaacgg ttgaaacgga tggcgaaatt caatatatttg aacagcttaa	180
	catggatgtg gaaaatgatt ttaacacggt agacggtagt ttaatgagtg aactccatat	240
40	acctatgcat acaaccgaca gtatgagtgg tggtgaaaaa gcaaaatata aattagctaa	300
	tgtcatatca aattatagtc cgatattact tttagatgaa cctacaaatc acttggataa	360
	aattggtaaa gattatctga ataatatattt aaaatattac tatgggtactt taattatagt	420
45	aagtcatgat agagcactta tagaccaaata tgctgacaca atttgggata tacaagaaga	480
	tggcacaata agagtgttta aaggtaatta cacacagtat caaaatcaat atgaacaaga	540
	acagttagaa caacaacgtc aatatgaaca gtatataagt gaaaaacaaa gattgtccca	600
50	agccagtaaa gctaaacgaa atcaagcgca acaaattggca caagcatcat caaaacaaaa	660
	aaataaaagt atagcaccag atcgtttaag tgcatacaaa caaaaagg	708
55	<210> 850 <211> 259	

EP 1 770 171 A1

<212> DNA
<213> Staphylococcus aureus

<400> 850
5 gatataggat acaaaataga agttgattgg atgccttcac gtatggaact taaacataaa 60
gaatatggat atttagatat tcatcccata aatctaaatg atgatgggtc aattactcaa 120
gcaaaccocg aaggtggcaa ttacgttttt caaaatgaat ggttctcaga aactaattat 180
10 aaaggccgaa aaataccatg tatttcaaaa gaagctcaac ttctttttca ttctgggtat 240
gacttaacag aaaaagacc 259

<210> 851
<211> 544
<212> DNA
<213> Staphylococcus aureus

<400> 851
20 catttaacga cgaaactggc taaaataagt aaacaggtaa cgtctattga attagacagt 60
catctattca acttatcgtc agaaaaatta aaactgaaca ttcgtgtcac ttttaattcac 120
caagatatcc tacagtttca attccctaac aaacagaggt ataaaattgt tgggaatatt 180
25 ccttaccatt taagcacaca aattattaaa aaagtgggtt ttgaaagcca tgcgtctgac 240
atctatctga ttgttgaaga aggattctac aagcgtacct tggatattca ccgaacacta 300
gggttgcctc tgcacactca agtctcgatt cagcaattgc ttaagctgcc agcggaatgc 360
30 tttcatccta aacaaaaagt aaacagtgtc ttaataaaac ttaccgcga taccacagat 420
gttccagata aatattggaa gctatatacg tactttgttt caaaatgggt caatcgagaa 480
tategtcaac tgtttactaa aaatcagttt catcaagcaa tgaaacacgc caaagtaaac 540
35 aatt 544

<210> 852
<211> 614
<212> DNA
<213> Staphylococcus aureus

<400> 852
45 ccagaaaaac cctaaagaca cgcaaaatth tattacttct aaaaagcatg taaaagaaat 60
attgaatcac acgaatatca gtaaacaaga caacgtaata gaaatcggat caggaaaagg 120
acatthtacc aaagagctag tcaaaatgag tgcgtcagtt actgctatag aaattgatgg 180
aggcttatgt caagtgacta aagaagcggg aaaccctctc gagaatataa aagtgattca 240
50 aacggatatt ctaaaattht ccttcccaaa acatataaac tataagatat atggtaatat 300
tccttataac atcagtacgg atattgtcaa aagaattacc tttgaaagtc aggctaaata 360
tagctatctt atcgttgaga agggatttgc gaaaagattg caaatctgc aacgagcttt 420
55 gggthtacta ttaatgggtg agatggatat aaaaatgctc aaaaagtac caccactata 480

EP 1 770 171 A1

5 ttttcacccct aagccaagtg tagactctgt attgattggt cttgaacgac atcaaccatt 540
 gatttcaaag aaggactaca aaaagtatcg atcttttggg tataagtggg taaaccgtga 600
 atatcgtggt cttt 614

10 <210> 853
 <211> 525
 <212> DNA
 <213> Enterococcus faecium

15 <400> 853
 gtccgaatcc tatgaaaatg tatcctatag aaggaaacaa atcagtacaa tttatcaaac 60
 ctatttttaga aaaattagaa aatgttgagg ttggagaata ctcatattat gattctaaga 120
 atggagaaac ttttgataag caaatTTTTat atcattatcc aatcttaaac gataagttaa 180
 aaataggtaa attttgcTca ataggaccag gtgtaactat tattatgaat ggagcaaTc 240
 20 atagaatgga tggctcaaca tatccattta atttatttgg taatggatgg gagaaacata 300
 tgccaaaatt agatcaacta cctattaagg gggatacaat aataggtaat gatgtatgga 360
 taggaaaaga tgttgtaatt atgccaggag taaaaatcgg ggatggTgca atagtagctg 420
 25 ctaattctgt tgttgtaaaa gatatagcgc catacatgtt agctggagga aatcctgcta 480
 acgaaataaa acaaagattt gatcaagata caataaatca gctgc 525

30 <210> 854
 <211> 467
 <212> DNA
 <213> Staphylococcus aureus

35 <400> 854
 cattagcagg aggatgtttc tggTgcatgg ttaaaccatt tacatcatat ccaggcatca 60
 agtcagTcgt atctggttat agtggcggtc atgttgacaa cccaacttat gaacaggTat 120
 40 gtacgaatca aaccggccat gtcgaagcag tacaattac gtttgatcca gaggttactt 180
 cctttgaaaa tatattagac atatatttca aaacatttga cccaactgat gatcaagggc 240
 aatttttTcga tagaggcgaa agctatcaac cagTcatttt ctatcatgat gaacatcaga 300
 45 aaaaggctgc tgagtTtaaa aagcaacaat taaatgaaca aggtattttc aagaaaccag 360
 tgattacacc tattaaacca tataaaaatt tctatccagc tgaagactac catcaagatt 420
 attacaaaaa gaaccoggta cattattacc aatatcaacg tggTtca 467

50 <210> 855
 <211> 451
 <212> DNA
 <213> Staphylococcus aureus

55 <400> 855
 gcatataaat atcaaaacca tacaagaaat aaaaaatgac tttcaaagaa gaatgaataa 60

EP 1 770 171 A1

	agttaaagaa acttatgggtg tatcagatga attatggaac agatggaaac aatgggttaga	120
5	aaacgacgaa ctatggcctc gacatgacgac catgatacat ggggacttac atccaggaca	180
	tataatggta gataaccaag caaacgtcac aggtctcata gactggactg aagcaaccca	240
	ctccgaccca tcaatggact ttatgggaca ccatcgtgta ttcgacgacg aaggattaga	300
10	gcaactcata acagcatatg gtaaagctgg aggtgaaata tggccacgaa tgaaagagca	360
	tataatagaa ctcaatgcag tattoccaat gtttatcgct gagtttgcta tggaatcagg	420
	agaatcggcg tatgaaacga tggcattgaa a	451
15	<210> 856 <211> 505 <212> DNA <213> Streptococcus pyogenes	
20	<400> 856 ggcttctgtct atggcttcac tattagggttt ttaccctat gcggtctttg gacctgcaat	60
	tgggtgtgcta gtggatcgtc atgataggaa gaagataatg attggtgctg atttaattat	120
25	cgcagcagct ggctcgggtgc ttactattgt tgcattctat atggagctac ctgtctggat	180
	ggttatgata gtattgttta tccgtagcat tggaacagct tttcacaccc cggtctctcaa	240
	tgcggttacg ccacttttag taccagaaga acagcttacg aaatgtgcag gctatagtca	300
30	gtctttgcag tctataagct atattgttag tccggcgggt gcagcactct tatactcgt	360
	ttgggaacta aatgctatta ttgccatcga tgtattgggt gctgtgattg catctattac	420
	ggtagcaatt gtacgtatcc ctaagctggg tgatcgcgtg caaagtttgg acccaaattt	480
35	cataagagaa atgcaagaag gaatg	505
40	<210> 857 <211> 540 <212> DNA <213> Escherichia coli	
	<400> 857 gttgagaatg ggagagactg agccgggtcag cagtccacg agcgcgcca acaacatcag	60
45	caccggcacg cctggcaact gtgaaagcag aagcgagccc accgcagagc cacaaaatgc	120
	caccgccagc cagttctgcg ctgatatccg ggcgcgacc gacgcatgaa tggcaatgcc	180
	aaggagacca ccagccccc tcatagagga gaacagccc agctctgcta cttggcgctc	240
50	tgcactctaca aacagcgcag gcatgatgac gctgccgttg gcgccaacga tgcccacgaa	300
	gatcatcact ataccaaaga gagggcgcag caggggttcg ctccagagaa aagcgacgcc	360
	ggcgcgcatg gagagagtcg ccgtcgtggt catcgtccga gcggcacgcg cgggaagcac	420
55	ccacgcgcg agcagacctg caaggacgga gcagaacgcc gtcagcccga gcgttggcgc	480

EP 1 770 171 A1

agcgccaagc aggccgattg cggccccccc aagggccggg ccacctagaa tcgcgacgtt 540

<210> 858
 <211> 500
 <212> DNA
 <213> Streptococcus pneumoniae

<400> 858
 5 actaagaaaa tcgtagctat ttgggccag gatgaagagg gtgtgattgg gaaagacaat 60
 cgtctacctt ggcatattacc agcagaactg caacacttca aagaaacaac tctgaatcat 120
 gctatcttga tggggcgggt aacctttgat ggaatagggc gtcgcttgct tccacaacgg 180
 15 gagactttga ttttgacacg taacctagaa gaaacgatag atgggggtgc tacttttcat 240
 gatgtccagt ctgtcttggg ctggtatcag gctcaagaaa agaattctta tattcttggg 300
 ggaaagcaga tttttcaggc ttttgaacct tatcttgacg aagtgattgt gactcacatt 360
 20 catgctcggg tggaggggaga tacctatttc cctgaagagt ttgatttgc tctttttgag 420
 acagtttcaa gtaaatttta cgccaaagat gagaagaatc cttatgattt taccatccaa 480
 tatcgcaaga gaaaggaagt 500

<210> 859
 <211> 423
 <212> DNA
 <213> Staphylococcus aureus

<400> 859
 30 caattacctt ggcacttacc aaatgattta aagcatatta aacaactgac cactgggaat 60
 acacttgtaa tggcacggaa aacttttaat tctataggga agccattgcc aaatagacgt 120
 35 aacgtcgtac tcactaacca agcttcattt caccatgaag gggtagatgt tataaactct 180
 cttgatgaaa ttaaagagtt atctggtcac gtttttatat ttggaggaca aacgttatac 240
 gaagcaatga ttgaccaggt agatgatatg tatatcacag taatagatgg aaagtttcaa 300
 40 ggagacacat tctttccacc atacacattc gaaaactggg aagtcgaatc ttcagtagaa 360
 ggtcaactag atgaaaaaaaa tactataccg catacattct tacatttagt gcgtagaaaa 420
 ggg 423

<210> 860
 <211> 506
 <212> DNA
 <213> Escherichia coli

<400> 860
 50 tgggaatggg agcttcttcg tctttttctc cattgcgccc ggactaatga tgggcaggca 60
 aggtgtgtct cagcttggct tcagcctgct gttcgccaca gtggcaattg ccatggtgtt 120
 55 tacggctcgt tttatggggc gtgtgatacc caagtggggc agcccaagtg tcttgccaat 180

EP 1 770 171 A1

	gggaatggga tgcctgatag ctggagcagt attgcttgcc atcaccgaaa tatgggcttc	240
	gcagtccegtg ttaggcttta ttgctccaat gtggctagtg ggtattgggtg tcgccacagc	300
5	ggtatctgtg tcgcccaatg gcgctcttcg aggattcgac catgttgctg gaacgggtcac	360
	ggcagttctac ttctgcttgg gcggtgtact gctaggaagc atcggaacgt tgatcatttc	420
	gctgttgccg cgcaacacgg cttggccggg tgtcgtgtac tgtttgacct ttgcaacagt	480
10	cgtgctcggt ctgtcttggtg tttccc	506
	<210> 861	
	<211> 530	
15	<212> DNA	
	<213> Enterococcus faecium	
	<400> 861	
	gataaccatc acaaacagaa tgatgtacct gtaaagatag cggtaaatat attgaattac	60
20	ctttattaat gaattttcct gctgtaataa tgggtagaag gtaattacta ttattattga	120
	tattttaagtt aaaccacagta aatgaagtcc atggaataat agaaagagaa aaagcatttt	180
	caggtatagg tgttttggga aacaatttcc ccgaaccatt atatttctct acatcagaaa	240
25	ggtataaatc ataaaactct ttgaagtcac tctttacagg agtccaaata ccagagaatg	300
	ttttagatac accatcaaaa attgtataaa gtggctctaa cttatcccaa taacctaact	360
	ctccgtcgct attgtaacca gttctaaaag ctgtatttga gtttatcacc cttgtcacta	420
30	agaaaataaa tgcagggtaa aatttatatc cttcttgttt tatgtttcgg tataaaacac	480
	taatataaat ttctgtggtt atactaaaag tcgtttgttg gttcaaataa	530
35	<210> 862	
	<211> 535	
	<212> DNA	
	<213> Staphylococcus aureus	
	<400> 862	
40	agaaaattgg gatagaaaag aatatatttga acactatttt aaccagcaaa ctacgtatag	60
	cattactaaa gaaattgata ttactttgtt taaagatatg agtaaaaaga aaggatatga	120
	aatttatcct tctttgattt atgcaattat ggaagttgta aataaaaata aagtgtttag	180
45	aacaggaatt aatagtgaga ataaattagg ttattgggat aagttaaata ctttgtatac	240
	agtttttaat aagcaaactg aaaaatttac taacatttgg actgaatctg ataacaactt	300
	cacttctttt tataataatt ataaaaatga cttgottgaa tataaagata aagaagaaat	360
50	gtttcctaaa aaaccgatac ctgaaaacac cctaccgatt tcaatgattc cttggattga	420
	ttttagttca ttttaatttaa acattggtaa caatagcaac tttttattgc ctattattac	480
55	gataggtaaa ttttatagtg agaataataa aatttatata ccagttgcct tgcag	535

EP 1 770 171 A1

<210> 863
<211> 632
<212> DNA
<213> *Proteus mirabilis*

5

5
10
15
20
25

<400> 863
ttagcactct atgcgacgat gcagggtgatc ttgcgaccta ttttaggaaa attatcagat 60
aaatatggca gaaaacctat tttattaatt tcgctattgg gtgcgcgatt agattaccta 120
ttaatggcctt gccccacctc attatgggatg ctctacattg gacgaataat tgcgggtata 180
acaggagcca ctggtgcagt atgcgcacatca gcaatgactg atgtaactca tcctcatgaa 240
agaacacgct atttcgggttt tttgggtggg gcatttgggtg tgggtttaat tattggcccc 300
atgttagggg gattactcgg tgagatcagc gccatacgc ctttatctt tgcggctatt 360
tctcattcgt tattatttat attttcatta ctttgtttcc aagaaactca aaccacaaaa 420
atttcgactg aaatatccgc attaaatcag gatacagcgc ctcaactctac cactgggtttt 480
attaaaaaga gtctcttttt ttggcttatt gcctatttta ttattcaact aatagggcaa 540
attccggcca ctatttgggt gctattcaca caagttcgtt tcgcttggca cactactgaa 600
gtagggtttat ctcttgcatt tcttgggtga tt 632

<210> 864
<211> 656
<212> DNA
<213> *Enterococcus faecalis*

30
35
40
45
50

<400> 864
cacctgcgag tacaaactgg gtgaacacag cctttatggt aaccttttcc attggaacag 60
ctgtatatgg aaagctatct gatcaattag gcatcaaaag gttactccta tttggaatta 120
taataaattg tttcgggtcg gtaattgggt ttgttggcca ttctttcttt tccttactta 180
ttatggctcg ttttattcaa ggggctgggtg cagctgcatt tccagcactc gtaatgggtg 240
tagttgcgcg ctatatcca aaggaaaata ggggtaaagc atttgggtctt attggatcga 300
tagtagccat gggagaagga gtcgggtccag cgattgggtg aatgatagcc cattatatc 360
attggctocta tcttctactc attcctatga taacaattat cactgttccg tttcttatga 420
aattattaaa gaaagaagta aggataaaag gtcattttga tatcaaagga attatactaa 480
tgtctgtagg cattgtatct tttatgttgt ttacaacatc atatagcatt tcttttctta 540
tcgttagcgt gctgtcattc ctgatatttg taaaacatat caggaaagta acagatcctt 600
ttgttgatcc cggattaggg aaaaatatac cttttatgat tggagttctt tgtggg 656

<210> 865
<211> 554
<212> DNA
<213> *Enterococcus faecalis*

55

EP 1 770 171 A1

	<400> 865	
	gacaaaggta caacgaggac ggataatacg cttttagaac gtcagagagg aattacaatt	60
5	cagacaggaa taacctcttt tcagtgggaa aatacgaagg tgaacatcat agacacgcca	120
	ggacatatgg atttcttagc agaagtatat cgttcattat cagttttaga tggggcaatt	180
	ctactgattt ctgcaaaaga tggcgtacaa gcaogaactc gtatattatt tcatgcactt	240
10	agggaaatgg ggattcccac aatctttttt atcaataaga ttgaccaaaa tggaattgat	300
	ttatcaacgg tttatcagga tattaaagag aaactttctg ccgaaattgt aatcaaacag	360
	aaggtagaac tgtatcctaa tgtgtgtgtg acgaacttta ccgaatctga acaatgggat	420
15	acggtaatag agggaaacga tgacctttta gagaaatata tgtccggtaa atcattagaa	480
	gcattggaac tcgaacaaga ggaaagcata agatttcaga attgttctct gtccctctt	540
	tatcatggaa gtgc	554
20	<210> 866	
	<211> 404	
	<212> DNA	
	<213> Enterococcus faecium	
25	<400> 866	
	tcttatggca gtacgcaacg taaaatcgat tgtgcgctct gtggaaaaac atgatttcag	60
	gttgacagc gaccgtggca aggtactcag cgacatgaca gttggtgtgg tgggaacggg	120
30	ccagataggc aaagcgggta ttgagcggct gcgaggattt ggatgtaaag tgttggtcta	180
	tagtcgcagc cgaagtatag aggtaaacta tgtaccgttt gatgagttgc tgcaaatag	240
	cgatatcggt acgcttcatg tgccgctcaa tacggatacg cactatatta tcagccacga	300
35	acaaatacag agaatgaagc aaggagcatt tcttatcaat actgggcgcg gtccacttgt	360
	agatacctat gagttggtta aagcattaga aaacgggaaa ctgg	404
40	<210> 867	
	<211> 250	
	<212> DNA	
	<213> Enterococcus faecium	
45	<400> 867	
	gtgcggtatt gggaaacagt gccgcgtag ttgttggcga ggtggaccaa atcaggctgc	60
	agtacggaat ctttcgtatt catcaggaag tcgagccgga aaaaggctct gaaaacgcag	120
	ttataaccgt tcccgcagac ctttcagcag aggagcgagg acggatacag gaaacggcaa	180
50	aaaaaatata taaagcgctc ggctgtagag gtctagcccg tgtggatatg tttttacaag	240
	ataacggccg	250
55	<210> 868	
	<211> 663	
	<212> DNA	

EP 1 770 171 A1

<213> Enterococcus faecium

<400> 868

5 aagtgtgggc attactgttt ttggatgcga acaggatgag gcaaattgctt tccgcgcttt 60

atcgccggat tttcatatta tccctacgct gattagcgat gcgatatcgg cagacaacgc 120

aaaattggcc gctggcaatc aatgcgttag cgtaggccat aagtcggagg tttccgaggc 180

10 gacaattctt gcgctgagaa aggtcggggg aaaatacatt tctacccgca gcatcggtg 240

cgatcacatt gatacgactg ccgccgagag aatgggaatc tcggttggca cggttgcgta 300

ttcgccggac agcgttgcgg attatgcttt gatgctgatg ctgatggcca tacgggggtg 360

15 aaaaaccacc atgcacgccg tggcgcaaca agatttcaga ttggatcgta tccgggggaa 420

agaactgggg gatatgactg tgggagttat tggaaccggc catatcgggc aagcggtcgt 480

caaaaggctg cggggatttg gatgccatgt gctggcctat gataacagcc gaaaaatgga 540

20 tgcagattat gtccagcttg atgagcttct aaaaaacagc gatattgtta cgctccatgt 600

gccgctttgt gcggataccc gccatctgat cggtcagaag caaattggag agatgaagca 660

agg 663

25

<210> 869

<211> 572

<212> DNA

<213> Enterococcus faecium

30

<400> 869

acgagaatta tacggttttc aaatactata ccgccaaaga agcattggaa tgtatagaca 60

agtctgagat tgaccttgcc atattggaca tcatgcttcc cggcacaagc ggccttacta 120

35 tctgtcaaaa aataagggaac aagcacacct atccgattat catgctgacc gggaaagata 180

cagaggtaga taaaattaca gggtaacaa tcggcgcgga tgattatata acgaagccct 240

ttcgccact ggagttaatt gctcgggtaa aggccagtt gcgccgatac aaaaaattca 300

40 gtggagtaaa ggagcagaac gaaaatgtta tcgtccactc cggccttgtc attaattgta 360

acacccatga gtgttatctg aacgagaagc agttatccct tactcccacc gagttttcaa 420

tactgcgaat cctctgtgaa aacaagggga atgtgggttag ctccgagctg ctatttcatg 480

45 agatatgggg cgacgaatat ttcagcaaga gcaacaacac catcaccgtg catatccggc 540

atttgcgca aaaaatgaac gacaccattg at 572

50

<210> 870

<211> 280

<212> DNA

<213> Enterococcus faecium

55

<400> 870

gaattctact tgtcgaggat gatgatcata tctgtaatac agtaagggcg tttctggctg 60

EP 1 770 171 A1

	aggcaggata tcaggtggat gcctgcacag atggaaatga ggcatacacc aagttttacg	120
	aaaacactta tcaactggtt attcttgata ttatgctgcc cggtatgaac gggcatgaac	180
5	ttttgcgtga atttcgtgcg aaaaatgata ctccattct gatgatgaca gccctgtcgg	240
	atgacgaaaa ccaaaccgg gcgtttgatg cagaggcaga	280
10	<210> 871 <211> 564 <212> DNA <213> Enterococcus faecium	
15	<400> 871 aatgatccga gggaaacttg gggattggat cttaagtatt ttggaaaaca aatatgactt	60
	aaatcacctg gacgcgatga aattatatca atattccata cggaacaata tagatatctt	120
	tatttatgtg gcgattgtca ttagtattct tattctatgt cgcgtcatgc tttcaaaatt	180
20	cgaaaatac tttgacgaga taaataccgg cattgatgta cttattcaga acgaagataa	240
	acaaattgag ctttctgctg aaatggatgt tatggaacaa aagctcaaca cattaaaacg	300
	gactctggaa aagcgagagc aggatgcaaa gctggccgaa caaagaaaaa atgacgttgt	360
25	tatgtacttg gcgcacgata ttaaaacgcc ccttacatcc attatcgggt atttgagcct	420
	gcttgacgag gctccagaca tgccggtaga tcaaaaggca aagtatgtgc atatcacgtt	480
	ggacaaagcg tatcgactcg aacagctaata cgacgagttt tttgagatta cacgggtataa	540
30	cctacaaacg ataacgctaa caaa	564
35	<210> 872 <211> 595 <212> DNA <213> Enterococcus faecium	
40	<400> 872 acatgagttg gaggaacac agcgatattt ctttgcggca gcttctcatg agctaaaaac	60
	gcccacgcg gctacaagcg ttctgttgga gggaatgctt gaaaatatcg gtgactacaa	120
	agatcattct aagtatctgc gcgaatgcat caaaatgatg gataggcagg gcaaaatcat	180
	ttccgaaata ctggagcttg tcagcctgaa tgatgggaga atcgtaacca tagctgaacc	240
45	gttggacata gggcgacggt ttgccgagtt gctgccgat tttcaaacct tggcagaggc	300
	aaacaaccag cggttcgtca cagatattcc agccgggcaa attgtcctgt ccgatccgag	360
	gctgctccaa aaggcactat ccaatgtcat attgaatgca gttcagaaca cgccgaggg	420
50	aggcgaggta cggatatgga gtgagcctgg tgctgaaaaa tgccgccttt ttgttttgaa	480
	catgggctgt cacattgatg atactgcgct tccaaggctg ttcaccccat tctatcgc	540
55	tgatcaggcg cgaagcagaa aaagtggggt aagcgggtta ggacttgcca tcgta	595

EP 1 770 171 A1

<210> 873
 <211> 598
 <212> DNA
 <213> *Enterococcus faecium*

5

<400> 873
 ggcagcaaaag accttaaacg gcttattgat aagaccgggg gaaacctttt ctttctggtg 60
 gctggtacgc catgcggaca aagatacccc ctataaagac ggccttacgg tgaccaatgg 120
 10 taaactcacc accatgtcgg gcggcggtat gtgccagatg agcaatttac tattttggat 180
 gttcctgcac acgccattga caattatcca gcgcagaggt cacgaagtaa aggagtttcc 240
 agagccaaac agtgacgaga ttaaaggggt ggatgcaacc atttcagagg gctggattga 300
 15 tttaaaagtg cgaaacgata ccgactgcac ctaccaaata tgggtgacct tagatgatga 360
 gaaaatcatc ggtcagggtg cgcgcgacaa agagccccaa gcattataca aaattacaaa 420
 tggcagtatc cagtatgtcc gtgaaagtgg cgggatttat gaatatgcc aggttaaacg 480
 20 gatgcaagtt gccttaggta ccggggaaat aatagattgc aagctgcttt atacaaacaa 540
 atgcaaaatc tgttatcccc tcccggaaag tgtggatatt caggaggaga accaatga 598

25

<210> 874
 <211> 673
 <212> DNA
 <213> *Enterococcus faecalis*

30

<400> 874
 gaagatggaa caattcaagg attcatggaa accattaata tgccttatgt aggcgcgggt 60
 gtcttagcta gcgttaacgc aatggacaaa atcatgacga aatatctttt acaaactgtt 120
 ggcattccac aagtaccatt cgtgccagtt ttaagaagtg actggaaagg aaatccaaaa 180
 35 gaagtctttg aaaaatgtga aggttcttta atttatccgg tctttgttaa acctgccaat 240
 atgggttcta gtgtcggaat tagcaaagtg gaaaatcgtg aagaattgca agaagcattg 300
 gaagaagctt tccgttatga tgcccagacg attggtgaac aagggatcga agcacgtgaa 360
 40 attgaagtag ccattttagg aaatgaagat gtccgtacga ctttacctgg tgaagtgggtg 420
 aaagatgtcg ctttctatga ttatgatgca aaatacatca ataacacgat tgaaatgcaa 480
 45 atcccagcgc atgttccaga agaagtagct catcaagcgc aagaatacgc taaaaaagcg 540
 tatattatgt tagatggaag tggcttaagt cgctgtgatt tcttcttaac aagcaaaaaac 600
 gaattattcc tgaatgaatt gaacaccatg cctggtttta ctgactttag tatgtatcct 660
 50 ttactgtggg aaa 673

55

<210> 875
 <211> 360
 <212> DNA
 <213> *Staphylococcus aureus*

EP 1 770 171 A1

	<400> 875	
	tacagtctat ccgggcattg ccagtcgggg atattaaaaa gagtataggt ttttattgcg	60
5	ataaactagg ttccactttg gttcaccatg aagatggatt cgcagttcta atgtgtaatg	120
	aggttcggat tcatctatgg gaggcaagtg atgaaggctg gcgctctcgt agtaattgatt	180
	caccggtttg tacaggtgcg gagtcgttta ttgctgggtac tgctagttgc cgcattgaag	240
10	tagagggaat tgatgaatta tatcaacata ttaagccttt gggcattttg caccccaata	300
	catcattaaa agatcagtggt tgggatgaac gagactttgc agtaattgat cccgacaaca	360
15	<210> 876	
	<211> 508	
	<212> DNA	
	<213> Enterococcus faecium	
20	<400> 876	
	tgggataact tcacaggaaa accggtggat gggatatgagg tgaatcgcat catcggcaca	60
	aaggccgtgg cgtttgctct gcgcgaggca caaatccatg cggctgcgct tggctatggc	120
	ttgcttttat gggatggata tcggccaaga actgcggttg actgcttcct gcgttgggca	180
25	gcgcaaccgg aggacaatct cacaaaagaa aaattttacc ccaatataga gcgagccgag	240
	ttgattacaa agggttatgt ggccacacaa tccagccata gccgtggaag cgcaattgat	300
	cttacgctct accacctgga tacaggggaa cttgtttcaa tgggaagtaa cttcgatttt	360
30	atggacgaac ggtcgcacat tacagcaaaa gggatagggg atgcagaggc acaaaatcga	420
	agatgcttgc gtaaaatcat ggaaagcagc ggatttcagt cttatcgctt tgaatgggtg	480
	cactataagt tgattgatga gccatacc	508
35	<210> 877	
	<211> 551	
	<212> DNA	
	<213> Enterococcus faecium	
40	<400> 877	
	atacttaggt tatgactacg ttaatgaagc actgttttct caggaaaaag tcgaatttca	60
	aaattatgat caaaatccca aagaacattt agaaaatagt gggacttctg aaaataccca	120
45	agagaaaaca attacagaag aacaggttta tcaaggaaat ctgctattaa tcaatagtaa	180
	atatcctgtt cgccaagaaa gtgtgaagtc agatatcgtg aatttatcta aacatgacga	240
	attaataaat ggatacgggt tgcttgatag taatatttat atgtcaaaag aaatagcaca	300
50	aaaattttca gagatgggtc atgatgctgt aaaggggtggc gttagtcatt ttattattaa	360
	tagtggttat cgagactttg atgagcaaag tgtgctttac caagaaatgg gggctgagta	420
	tgccctacca gcaggttata gtgagcataa ttcaggttta tcaactagat taggatcaag	480
55	cttgacgaaa atggaacgag cccctgaagg aaagtggata gaagaaaatg cttggaaata	540

EP 1 770 171 A1

	cggggttcatt t	551
5	<210> 878 <211> 552 <212> DNA <213> Enterococcus faecium	
10	<400> 878 gtgcgttcat tatttcgttc acagtctgca cgctgttttt ggggtggaga ctggcttccg	60
	tattggaggc aacacagata ccgccatcc ctgcaactca tacaggcagc agcactgacg	120
	tagtggagaa tttggaggaa aacgctcttg ccaccgcaa agaacaggga gatgaacagg	180
15	aatggagcct gatttttagtg aacaggcaga accccatccc cgcacagtac gatgtggagc	240
	ttgagcaact atcaaattggg gagcggatag atattcggat ttctccctat cttcaagatt	300
	tgtttgatgc cgcaagaact gatggagttt acccgattgt cgcacccgga taccgaacaa	360
20	cagaaaaaca gcaagaaatt atggatgaaa aaattgccga atataaggcg aaaggctaca	420
	cctctgcaca ggctaaagcg gaagcagaaa cttgggtggc cgtgccggga acgagcgagc	480
	atcagcttgg tcttgcgttg gatatcaatg cggacggaat tcattcaaca ggcaacgagg	540
25	tttatagatg gc	552
30	<210> 879 <211> 542 <212> DNA <213> Enterococcus faecalis	
	<400> 879 ttgtctggta tcccctatgt aggetgcat attcaaagct ccgcagcttg catggacaaa	60
35	tcactggcct acattcttac aaaaaatgcg ggcacgccc tccccgaatt tcaaatgatt	120
	gaaaaagggtg acaaacggga ggcgaggacg cttacctacc ctgtctttgt gaagccggca	180
	cggtcaggtt cgtccttttg cgtaaccaa gtaaacagta cggaagaact aaacgctgcg	240
40	atagaagcag caggacaata tgatggaaaa atcttaattg agcaagcga ttcgggctgt	300
	gaggtcggct gcgcggtcat gggaaacgag gatgatttga ttgtcggcga agtggatcaa	360
	atccggttga gccacggtat cttccgcac catcaggaaa acgagccgga aaaaggctca	420
45	gagaatgcga tgattatcgt tccagcagac attccggtcg aggaacgaaa tcgggtgcaa	480
	gaaacggcaa agaaagtata tcgggtgctt ggatgcagag ggcttgctcg tgttgatctt	540
50	tt	542
55	<210> 880 <211> 457 <212> DNA <213> Enterococcus faecium	
	<400> 880	

EP 1 770 171 A1

	aggattgcta gctttatatt tagtgacact aatctgggta gtgttattca aattacaata	60
	caatatttta tcagtattta attatcatca aagaagtctt aacttgactc catttactgc	120
5	tactgggaat ttcagagaga tgatagataa tgttataatc tttattccat ttggcttgct	180
	tttgaatgtc aatttttaaag aaatcggatt tttacctaag tttgcttttg tactggtttt	240
	aagtcttact tttgaaataa ttcaatttat cttoctatt ggagcgacag acataacaga	300
10	tgtaattaca aatactgttg gaggccttct tggactgaaa ttatatgggt taagcaataa	360
	gcatatgaat caaaaaaat tagacagagt tattatTTTT gtagggtatac ttttgctcgt	420
	attattgctc gtttaccgta cccatttaag aataaat	457
15		
	<210> 881	
	<211> 360	
	<212> DNA	
	<213> Enterococcus flavescens	
20		
	<400> 881	
	aagctgcctt atgtagggtg cggggtggcc ggctctgcct tatgtatgaa caaatggctg	60
	ctgcatcaag ctgcagcagc cattggcgta caaagtgtc ctaogattct cttgacaaat	120
25	caagccaacc agcaagaaca aatogaagct tttatccaga cccatggctt tocagttttc	180
	tttaagccta atgaagcggg ctctcaaaa gggatcacta aagtcacctg cgttgaagaa	240
	atcgcttctg ccttaaaaga agcctttact tattgttccg cagtgtcctt acaaaaaaat	300
30	attgccggtg ttgagatcgg ttgcggtatt ttgggcaacg actctttgac tgtcgggtgct	360
	<210> 882	
	<211> 459	
35	<212> DNA	
	<213> Enterococcus faecium	
	<400> 882	
	gacatacgag ttggctgaat cgcttttgaa ggcaaaagaa ctggctgcta cccaagggtg	60
40	cggattgctt ctatgggacg gttaccgtcc taagcgtgct gtaaactgtt ttatgcaatg	120
	ggctgcacag ccgaaaaata acctgacaaa ggaaagttat tatoccaata ttgaccgaac	180
	tgagatgatt tcaaaaggat acgtggcttc aaaatcaagc catagccgcg gcagtgccat	240
45	tgatcttacg ctttatcgat tagacacggg tgagcttgta ccaatgggga gccgatttga	300
	ttttatggat gaacgctctc atcatgcggc aaatggaata tcatgcaatg aagcgcaaaa	360
	tcgcagaagt ttgcgtcca tcatggaaaa cagtgggttt gaagcatata gcctcgaatg	420
50	gtggcactat gtattaagag acgaaccata cccaatag	459
	<210> 883	
	<211> 500	
55	<212> DNA	
	<213> Proteus mirabilis	

EP 1 770 171 A1

	<400> 883	
	cctttgaagc tggtaactgac cctgatattg cgcaagtcca agtgcaaaat aaattgcaat	60
5	tggcaatgcc tcttttacct caggaagtac aacaacaagg gattagtgtc gataaatctt	120
	ctagttcatt cttaatgggt gcagggtttta tctctggtga tggctcgatg tcacaagatg	180
	acatcgccga ctatgtaggt gcaacaatta aagatccatt aagccgtgtc acaggggtgg	240
10	gtgaaacgca gttatttgggt acacaatacg caatgcgtat ttggtttagat ccagataaac	300
	tggtgaaata taacatgacc acaattgatg ttattaatgc gattaaatcg caaaataacc	360
	aagtggcggc aggccaaatta ggtggtaacgc caccagtgcc tggtcagcgt ttaaattgtat	420
15	ctatcattgc gcaaactcga cttaatacac ctgagcaatt tgctgatatt ctgatgaaag	480
	tcaatcaaga cggttcacag	500
20	<210> 884	
	<211> 280	
	<212> DNA	
	<213> Pseudomonas aeruginosa	
25	<400> 884	
	tgtcgaagtt tttcattgat aggcccattht tgcggtgggt gatcgcttg gtgatcatgc	60
	tgcgggcgg cctgtcgatc ctcaatctgc cggtaacca gtaccgcggc atcgcccg	120
	cggccatgc cgtgcaggtg agctaccgcg gcgectcggc cgagacggtg caggacaccg	180
30	tggtcaggt gatcgagcag cagatgaacg ggatcgacaa tctgcgctac atctctcgcg	240
	agagtaactc cgacggcagc atgaccatca ccgtgacctt	280
35	<210> 885	
	<211> 477	
	<212> DNA	
	<213> Staphylococcus aureus	
40	<400> 885	
	caatggttac aggttgtgga agaactttct ccttttaaag ctggcttata cctattacct	60
	atggcaatag gagctatggt gtttgcacca attgcacccg gattagcggc gcgatttgga	120
	ccgaaaatag tgttaacctc cggaattgga attgcagcca ttggcatggt tattatgtat	180
45	ttctttggtc atccattatc atattctaca atggcttttag cattaatttt agttgaagct	240
	ggtagcgctt cactagcagt tgcattctgt ctaataatgt tagaaacacc tacatcaaaa	300
	gcaggtaatg cagctgctgt tgaagagtct atgtatgacc ttggaaatgt ttttggtgta	360
50	gcagtacttg gtagcctatc ttctatgctt tatcgtgtat ttttagatat ttcatctttt	420
	tcatcaaaag gtatagttgg agatttagct catgtagctg aagaatctgt agtgggc	477
55	<210> 886	
	<211> 584	

EP 1 770 171 A1

<212> DNA
<213> Escherichia coli

<400> 886

5	ctcttagacg cctgtccga tcagatgcac cgtgtttcaa tcgacagctt ccaaccggaa	60
	accagagcgt atgcgctcaa gcgcggcgtg ggctacctga acgatatcca aggatttcct	120
	gacctgcgc tctatcccga tattgctgag gcggactgca ggctgggtgt tatgactca	180
10	gcgcagcggg atggcatcgc caccgcacc ggtcaccttc gaccggaaga cgcgctcgac	240
	gagattgtgc ggttcttcga ggcgcggtt tccgccttgc gacggagcgg ggtcgctgcc	300
	gaccggtcga tctcgatcc ggggatggga tttttcttga gcccgcacc ggaaacatcg	360
15	ctgcacgtgc tgtcgaacct tcaaaagctg aagtcggcgt tggggcttcc gctattggtc	420
	tcggtgtcgc ggaaatcctt cttgggcgcc accgttgccc ttctgtaaa ggatctgggt	480
	ccagcgagcc ttgcggcgga acttcacgcg atcggcaatg gcgctgacta cgtccgcacc	540
20	cacgcgcctg gagatctgcg aagcgcaatc accttctcgg aaac	584

<210> 887
<211> 784
<212> DNA
<213> Escherichia coli

<400> 887

30	catcgtcaac ataacctcgg acagtttctc cgatggaggc cggatatctg gccagacgc	60
	agccattgcg caggcgcgta agctgatggc cgagggggca gatgtgatcg acctcggtcc	120
	ggcatccagc aatcccgaag ccgcgcctgt ttcgtccgac acagaaatcg cgcgtatcgc	180
	gccggtgctg gacgcgctca aggcagatgg cattcccgtc tcgctcgaca gttatcacc	240
35	cgcgacgcaa gcctatgcct tgtcgcgtgg tgtggcctat ctcaatgata ttgcgggtt	300
	tccagacgct gcgttctatc cgcaattggc gaaatcatct gccaaactcg tcgttatgca	360
	ttcggtgcaa gacgggcagg cagatcggcg cgaggcaccc gctggcgaca tcatggatca	420
40	cattgcggcg ttctttgacg cgcgcacgc gcgctgacg ggtgccgga tcaaacgcaa	480
	ccgccttgtc cttgatcccg gcatggggtt ttttctgggg gctgctccc aaacctcgt	540
	ctcgggtgctg gcgcggttcg atgaattgcg gctgcgcttc gatttgccgg tgcttctgtc	600
	tgtttcgcgc aaatccttctc tgcgcgcgct cacaggcgt ggtccggggg atgtcggggc	660
	cgcgacactc gctgcagagc ttgcgcgcgc cgcagggtga gctgacttca tccgcacaca	720
50	cgagccgcgc cccttgccgc acgggctggc ggtattggcg gcgctgaaag aaaccgcaag	780
	aatt	784

<210> 888
<211> 344
<212> DNA

EP 1 770 171 A1

<213> Staphylococcus lugdunensis

<400> 888

5 gaggtgtaat tatgattcag actattgtaa ctgctgctat ctttatattg cgcaagcatt 60
agacttatta gtgattttat taatgttctt tgctagagca aagactagga aagaatatcg 120
agatatttat attggtcaat atgtaggatac tgtggcatta attgtcataa gtttattctt 180
10 tgcctttgtc ttaaattatg ttcctgaaaa atggatatta ggattattag ggtaataacc 240
gatttattta ggaattaaag tggctattta tggatagatg gacggagaag agagagctaa 300
aaaagaattg aatgaaaagg gattgtctaa attagttggt acga 344

<210> 889

<211> 503

<212> DNA

<213> Pseudomonas aeruginosa

<400> 889

20 ctcgaccgca tctacgtcga cgtcaccag ccgccaccg ccctgttgcg catgcgccgc 60
gaactggcca gcggccagtt ggagcgcgc gccgacaacg ctgcgaaggc ctccctgaag 120
25 ctggaggacg gtagccaata ccgctggaa ggccgcctcg aattctccga ggtttccgtc 180
gacgaaggca ccggtcggg caccatccgc gccgtgttcc ccaaccgaa caacgagctg 240
ctgcccggca tgttcgttca cgcgcagttg caggaaggcg tcaagcagaa ggccatcctc 300
30 gctccgcagc aaggcgtgac ccgcgacctc aaggccagc ctaccgcgct ggtggtgaac 360
gcgcagaaca aggtcgagct gcgggtgatc aaggccgacc gggatgatcg cgacaagtgg 420
ctggtcaccg aaggcctgaa cgcggcgac aagatcatta ccgaaggcct gcagttcgtg 480
35 cagccgggtg tcgaggtgaa gac 503

<210> 890

<211> 503

<212> DNA

<213> Proteus mirabilis

<400> 890

tgcatcata gctcttaaca taatcgggc tttctttaa tcaagggttg caggaagttg 60
45 ttttttttcg atacagcgag ataaagattg ctctattcta gagtaatcg ctgcacataa 120
ttctcggcgg atttcaacaa ttggtgtcat ttcaccaaca aattcgact tatggaaata 180
tatttctaga agtgcattat gtttcggatc ttogacaatt gatgtcaata tgtaaataag 240
50 caattctctt aatacaata gtggatcacc tggatatttt gattgatact ctaattctaa 300
tgattctatt ttttaagtcg tgagttcaca cgcttcagta aataaatcca ctttattctt 360
aaagtgccaa tatattgcac ctcgagttac tccggcctcg gttgcaatat ctgaaagtga 420
55 tgtggcagaa acaccttgca cagtaaatag cctaagtga gcatcaataa tctgctgtct 480

EP 1 770 171 A1

	tgtctcttgt gcttggcgtt tag	503
5	<210> 891 <211> 343 <212> DNA <213> Enterococcus faecalis	
10	<400> 891 gaccaggagt tggtaggttt attgcttatt taggaattcg cgctccattt tttgcggccg	60
	catttttagc gtttattggt tttattttga cattaactgt tttgaaggag ccagagaaac	120
	gaatttttagc cgctgttgaa gcgaaaaaag gttcatttat ggatatttta agaaatccaa	180
15	tgtttaacctc attatttgtg attatcttaa tttcctcttt tggcctgcaa gcgttcgaat	240
	ctatttatag tattatggcg accattaatt ttggctttac cacaagtga atagcaatcg	300
	tgattacggg tagtggtatt ttagcgttga tttgtcagct gtt	343
20	<210> 892 <211> 544 <212> DNA <213> Proteus mirabilis	
25	<400> 892 ctggctctgt tagtgctttc aggcagcttg gttgttgctg gatgtggcga caaaaatcag	60
	tctgctggag gtccacctcc tgctcctgct gtaggtgttg ttacattaga tgcgaaacca	120
30	ctgactatca caacagactt acctggctcg acatctgctt atcgtatcgc agagggtcgc	180
	cctcagggttg gcggcatcat cttaaaacgc aattacaccg aaggtagtta tgtagaagca	240
	ggaacatctt tataccaaat cgatcctgct atttttcaag ctacattaaa cagtgcctca	300
35	gctgatttag caaaagcgaa agcgaatgct gaaattgctc gtctgactgt agagcgctat	360
	aaacctctac tcggcaccaa ttatgtcagt aaacaagatt ttgataccgc aacatctcag	420
	tacgtcgaag ctgttgctgc agtaaaagca gctgaagcta cagtgactaa tgcaaaaatt	480
40	aatcttgaat ataccaaagt caccgcacca atttctggcc gttcaggtaa atcaacggta	540
	acag	544
45	<210> 893 <211> 573 <212> DNA <213> Proteus vulgaris	
50	<400> 893 cctgaaatcc actactgacc ggctccagcc gctgacctta gatacctgcc agcaagctaa	60
	ccccgaactg accgcccgcg cagcgttttag catgaatgtc cgaacgtttg tgctggtgaa	120
	agataaaaaa acattctggt catctgcgac cggtagatg gacattccac tcaatgaatt	180
55	gattccggcg ctgcacatta ataaaaacgt cgatatggcg atcttaccgc gcacgccgat	240

EP 1 770 171 A1

	ggtagccgaac aaaccgcgcaa tcgtcatctg gtatcgcaac cctttgctga aaaatagcgg	300
	cgtctttgcc gctctgaatc tcaacctgac gccttcactc ttttatagtt cacggcagga	360
5	agattacgat ggcgtcgccc tcattatttg caatactgcg ctatctacct tttcttcacg	420
	tttgatgaac gttaacgaat taaccgacat gccagtcggt gaaactaaaa ttgcgggcat	480
	tcctctgacc gttcggcctt atgcagatga ctggacatgg aacgatgtgt ggtacgcatt	540
10	tttactgggc ggcatgagtg gaactgtcgt tgg	573
	<210> 894	
	<211> 581	
15	<212> DNA	
	<213> Streptococcus mutans	
	<400> 894	
	gaaatgatat tgacgggact ttcataaaaa ttttcaagga cttgaggtgt aataatatct	60
20	tttttaggac cttgagccac tattttacct ctacgaagga ggaggatatg actcatttta	120
	tcagtgatatt cttcagcatg gtgggtaaca taaaggatag ttggagcatg tggtaactca	180
	gtaatctttt caacttgtgt tagcaatttt tcacgggcaa aaagatccag tccgctgggt	240
25	gcttcatcca aaataatgat ttcaggatct tccataaggc tgcgcgcaat aaggaggagt	300
	tgtttttcac cttgtgagag gctgctatag atgcgaccaa gcaagtgttt tccgccgatg	360
	acagtaagca tttggcgtgc ttcattaagt tctgtttcgt cgtattcctt gtagagaatg	420
30	cttgatttgt atttaccagt tagcacgatc ttttcagcca acatatttgc agggagtcgc	480
	tcagcaataa aagagcccac gacaccgatt ttagtcgcga tattgggaat atcacctga	540
35	ccaaacctag tattgagaat ttcaacctgt ccttgtgttg a	581
	<210> 895	
	<211> 281	
	<212> DNA	
40	<213> Escherichia coli	
	<400> 895	
	aaggctggct ttttcttggt atcgcaatag ttggcgaagt aatcgcaaca tccgcattaa	60
	aatctagcga gggctttact aagcttgccc cttccgccgt tgtcataatc ggttatggca	120
45	tcgcatttta ttttctttct ctggttctga aatccatccc tgcgggtgtt gcttatgcag	180
	tctggtcggg actcggcgtc gtcataatta cagccattgc ctggttgctt catgggcaaa	240
50	agcttgatgc gtggggcctt gtaggtatgg ggctcataat t	281
	<210> 896	
	<211> 609	
	<212> DNA	
55	<213> Staphylococcus aureus	
	<400> 896	

EP 1 770 171 A1

	attagaaatt gcgactggtg caatcactgc aggtacatta attgcaatga tatttttatgt	60
	tattcagtta tctatgcctt taatcaatct ttccacgtta gttacagatt ataaaaaggc	120
5	agtcggtgca agtagtagaa tatacgaaat catgcaagaa cctattgaac cgacagaagc	180
	tcttgaagat tctgaaaatg tattaattga tgacgggtga ttgtcatttg aacatgtaga	240
	ctttaaatat gatgtgaaga aaatattaga tgatgtgtcg ttccaaatcc cacaaggcca	300
10	agtgagtgtc ttgttaggcc cttctgggtc tggtaaaagt acgatattta atctgataga	360
	acgtatgtat gaaattgagt cagggtgatat taaatatggc cttgaaagtg tctatgatat	420
	cccgttatct aagtggcgac gcaaaattgg atatgttatg caatcaaatt cgatgatgag	480
15	tggtacaatt agagacaata ttttatacgg aattaatcgt catgtttcag atgaagaact	540
	tattaattat gctaaattag cgaactgtca tgattttatc atgcaatttg atgaaggata	600
20	tgacacgct	609
	<210> 897	
	<211> 274	
	<212> DNA	
25	<213> Staphylococcus aureus	
	<400> 897	
	ttggatagtt caacaaaaac attaacagaa gataaacagg ttaccgtgt ggagggtttc	60
	tcgtgtgcca attgtgctgg gaagtttgaa aaaaatgtaa aagaactatc aggggtgcat	120
30	gatgctaaag tcaatttcgg agcttccaaa attgatgtct ttggcagtgc aaccgttgaa	180
	gatctggaag aggctgggtgc ttccgagaat cttaaagtgg caccagagaa ggctagaaga	240
35	agggtcgaac cagtggtaac agaagataaa aatg	274
	<210> 898	
	<211> 532	
	<212> DNA	
40	<213> Klebsiella oxytoca	
	<400> 898	
	tgagcagcgt aaccagacat ggctggagtt ggtgggggaa gcgcagcagc tcatgggcga	60
	acgtgcccgc gcagatgagc cgcggggcgat tgcgctggca acccgctgga tggagcagct	120
45	ggagcaggat accgcgggca ggccggagtt tctgactcgc ctgaatgaga tgcacgccgc	180
	cgaaccgcag atgcgtgaac aaactggggt gacgccggag atgattgatt tcattaccgc	240
	tgcttttgcc gaaagcaagc tggccatctg ggcgcgctat ctgaacgccg aagagctggc	300
50	ctttaccgcg cagcactatt tcgatcgctt gatggagtgg ccggcgctgg tggccgacct	360
	gcacgcgggc tgcgtgaga agcgagaccc ggccctcccc gaaggtcagc agctggcgca	420
55	gcgctggctg gcgctgttcc agtcttacgc gggtaaagat gcgcagacgc agcagaagtt	480
	tcgctatgcc atggagcagg agccgcattt gatgaaagga acgtggatga ct	532

EP 1 770 171 A1

5 <210> 899
 <211> 500
 <212> DNA
 <213> *Klebsiella pneumoniae*

 <400> 899
 atgaaaaacc ctcatcaaaa actttcatca tcaccattag cagtgggtgcg cagtattgcc 60
 10 actcactgga gtattattct gcagatggct aaacgtgatg ttgttggaag atataaaggt 120
 tctgtgatgg gcctgctttg gtcttttttg aaccctttat ttatgttaac agtatatact 180
 tttgtcttct ccgtgggtatt caaagccaga tgggtcaactg gtggggacga aagtaggaca 240
 15 cagtttgcta taattttatt tgtcggaatg atagttcatg gttttttaag tgaagtggta 300
 aataaagcgc cgttgattat tttgggaaat acaaactatg tgaagaaagt tatatttcca 360
 ttggaaacgc tgctgttat ctctttatct gcggcattat ttcatacttg taccagcctt 420
 20 tgtgtgttac tgatggcggt tttcattttt aatggatatt tacattggac catagtgttt 480
 ttacctttgg tctttttccc 500

 25 <210> 900
 <211> 370
 <212> DNA
 <213> *Enterococcus faecium*

 <400> 900
 30 agaacatata cgcaacaag gagaaggaat ccttctctct ccgaaagtaa gctttcaagt 60
 atatcagcaa aagggttata aaatgacatc tgaagaatcc atcattcgtt ttgtcatgag 120
 acaaacagag ttttcagaat cgcttgctcg tagtttgctg aatcacttag ggggttgctca 180
 35 ggaaactctg acgaaaccgt tatgtacatt aagtggggga gaagcgaccc gtctgacgat 240
 tgctttgctt tttactaagc caagtaatgt gttgctgtta gatgaaccga ctaattttat 300
 tgatatggca acgatcgaag ctttagagaa gctaatacaa atatatccgg gaacgatttt 360
 40 gtttacctca 370

 <210> 901
 45 <211> 400
 <212> DNA
 <213> *Escherichia coli*

 <400> 901
 50 aaccgtttat acgttgggtga gttggttggc cattctggga tactgggttc tcattgcagg 60
 cgtaacttta cgcattctaa tgaaacgacg cgcagttccc tccgcgatgg cctggctgtt 120
 gattatttac attctgccgt tagtcggaat tattgcctat cttgccgttg gcgagctcca 180
 tttaggcaaa cgccgcgctg agcgcgccag agcgatgtgg ccttccaccg caaaatggct 240
 55 taacgacctt aaagcctgta agcatatctt cgccgaagaa aatagcagtg tcgctgcgcc 300

EP 1 770 171 A1

	attattcaag ctttgcgagc gtcgtcaggg gatcgctggg gtcaaaggga atcagctaca	360
5	actgatgacc gagtcagatg atgtgatgca ggcgttaatc	400
	<210> 902	
	<211> 540	
	<212> DNA	
10	<213> Klebsiella pneumoniae	
	<400> 902	
	atgttctcgc tgcagttctg gcctatgaga aagggatgat cctggccaac gataaaccag	60
15	agcctacaaa acttgcagag aacgcgtctt ctgaaacttg cagtttgga gacctcaaaa	120
	gcattcagtt acatactgct aatgaagaaa ttggggaaaa acgttttggt actgcgcgtg	180
	ctattattaa aaatcttacc atctacaaat cagatggtag gactttgaca gagaaaccac	240
20	tcacacaaac aggtgaagaa gttacatttg atttcaccat attagctacc gaagagatta	300
	aggatgttgc tcttggcctt tccatatcca aagctcaggg aggggatatt tggggagata	360
	gtaatatggg cgcaggttca ccaattacac ttcgtccagg tagtcagcgt atcgtttata	420
25	aagcaacgct gcctataaat tcgggcgatt acctaataca ctgcggcctc gctatggttg	480
	gcaacgggtgc tcgagaggag cttgatcaac gtcgcccgat gatgaaaata aagttttggt	540
	<210> 903	
30	<211> 770	
	<212> DNA	
	<213> Klebsiella pneumoniae	
	<400> 903	
35	ataaagcaat gaagcctaaa gttatcgctt ctattgtatt atttaatcat tcctatgatg	60
	atattaaaga tacgttcctc tcattatgcc atgaagagag cgttgaaaaa ataactcttcg	120
	ttgataatgg tgggtgtcag tgggcggcat cattgaatga acctaagggtg agctacatca	180
40	agtctcctta caactgtggt tttggtgctg gacataatct tgcaataaaa gcaagtgcag	240
	actttgacgg ttatcttctt atatgtaac cggatataag ctttgataag cagtcacttg	300
	ataaattagt ttcgtttgcg tgggaaaatg agtatagttt tttgttttcc ccgcaaataa	360
45	tatatagaaa tggtagagaga caatatagtt gccgtgtact acctactccc ggtaatcttt	420
	taagacgttt ctttcagtg actgcaataa agtacgatgt taaatatgaa ctgaaagatg	480
	cagcctatga tgagatatct tccccaccaa cggatgtggt ctggttcatg ttattaagta	540
50	atgtattatt gcaaaaactt aacggttttg atgaacgata ctttatgtat ctggaagatg	600
	tagatttatg tcgccgagca ttacagctaa ccaaaatata ctattatcct ggaacaacta	660
	ttgtccatgc ctttaataaa ggttcgtata aaagcaaatt attactttgg taccatattc	720
55	gctccgcagt ttctattttt aataaatggg gatgggttct tgatcgtaaa	770

EP 1 770 171 A1

<210> 904
 <211> 614
 <212> DNA
 5 <213> Staphylococcus aureus

 <400> 904
 gggtacttgt tgctgctttt gcgttatctc aaatgattat atcgccggtt ggtgggtacgc 60
 tagctgacaa attagggaag aaattaatta tatgtatagg gttaatttta ttctcagtgt 120
 10 cagaatttat gtttgcagtt ggccacaatt ttctgggtatt gatgttatcg agagtgattg 180
 gtggatatgag tgctgggtatg gtaatgccgg gtgtgacagg tttgattgca gatgtttcac 240
 15 caagccatca aaaagcaaaa aactttggct acatgtcagc gattatcaat tctggattca 300
 ttttaggacc agggatttgt ggatttatgg cagaagtttc acatcgatg ccattttatt 360
 ttgcagggtgc attaggcatt ttagctttca taatgtcagt tgtattgatt catgatccga 420
 20 aaaagtctac gacaagcggc ttccaaaaac ttgagcccca attattaaca aaaattaatt 480
 ggaaagtctt tattacgcca gcaattttta cgctcgtctt agcgttcggt ttatcggcat 540
 ttgaaacact gtattcttta tatacatcgt ataaagtaaa ttattcacct aaagatattt 600
 25 cgattgcgat tacg 614

 <210> 905
 <211> 411
 <212> DNA
 30 <213> Pseudomonas aeruginosa

 <400> 905
 gaactacccc gtgaatcccg acctgatgcc gcgctgatg gcggtcttcc agcatgtgcg 60
 35 gacgcgcac cagagcgagc tcgattgcca gcgactcgac ctgaccccg cgcagctcca 120
 tgtattgaag cttatogacg aacaacgcgg gctgaacctg caggacctgg gacgccagat 180
 gtgccgcgac aaggcactga tcacccggaa gatccgcgag ctggagggaa gaaacctggt 240
 40 ccgccgcgag cgcaacccca gcgaccagcg cagcttccag ctcttctca ccgacgaggg 300
 gctggccatc caccagcatg cggaggccat catgtcacgc gtgcatgacg agttgtttgc 360
 cccgctcacc ccggtggaac aggccaccct ggtgcatctc ctgaccagt g 411
 45

 <210> 906
 <211> 401
 <212> DNA
 50 <213> Escherichia coli

 <400> 906
 gcaaggaccg ttctatcatg gaaccaaagc caatttggcg attggtgact tgctaaccac 60
 agggttcatc tctcatttcg aggacggtcg tattcttaag cacatctact tttcagcctt 120
 55 gatggagcca gcagtttggg gagctgaact tgctatgtca ctgtctggcc togagggtcg 180

EP 1 770 171 A1

	cggctacata tacatagttg agccaacagg accgttcgaa gacgatccga atcttacgaa	240
	caaaaaattt cccggtaatc caacacagtc ctatagaacc tgccaaccct tgagaattgt	300
5	tggcgttggt gaagactggg aggggcatcc tgttgaatta ataaggggaa tgttggttc	360
	gtagaggac ttaaagcgcc gtggtttaca cgtcattgaa g	401
10	<210> 907 <211> 742 <212> DNA <213> Staphylococcus aureus	
15	<400> 907 tacgatgaca ccagtctttg aattgaaaaa tgtcaattac tactatgatc ataaaaaagt	60
	gtagaaaaat ataaacatta aaataaataa aggtgaattt ttagcaattg ttggaccaa	120
	tgggtgctggt aaatcaacat tattgaagtt gattctaggg ttattacott tacaagtgg	180
20	tgagattttt gttggaggta ttgattttta aaataagaaa acatccatta aattaagcta	240
	tgtatcacia aaagcaaatg cctttaattc aggtttccca gcaagtgtta aagaagttgt	300
	tttaagcggg ttaacaaaga caaacgtct tttccaaaca tttaatatga aagataatga	360
25	aaaagtgatt aaagtactag aaagactgaa tataagtgat ttaattcata aaaatatagc	420
	agaattatca ggtggtcaac aacaacgtgt aatgattgct cgagcattga tttcagaacc	480
	tgcagtatta gtacttgatg aaccaacgaa tgggtattgat gcaaacatg taagtgaatt	540
30	ttataatact ttagatcaat taaaacaaga aggtatcacc attatcttag ttactcatga	600
	tatcgggtgt gtagcagata ctgctactga agtagcatgt ttaaataagc atttgcattt	660
	ccatggtaca actgatgagt ttaaactact tgatgaagtt gaaatttcaa aaatttatgg	720
35	acatcctgta cgttttgtcg at	742
40	<210> 908 <211> 352 <212> DNA <213> Staphylococcus aureus	
45	<400> 908 tagcaacctc cctttgatac aagaaagctt tttctacaag ctgtttaaca tgctcatcat	60
	ctagtgaata atagactact tttccttctt tacgggtattt tgctatacct aaatttttca	120
	ataatcttaa atgatgggat gccgtagccg ttgaagattc aatgatatta gctacatcac	180
50	aaacacataa ctctccctct aaagacaaaa cataagcaat tttaactctt gtatcatctg	240
	atagagcctt aaaaactttc gctacatcca taggattctg tttagcaagg tcttttttag	300
	ccctgtttac cttatcttca tgaatatagg taacttcaca catatctttt gt	352
55	<210> 909 <211> 583	

EP 1 770 171 A1

<212> DNA
<213> Enterococcus faecalis

<400> 909

5 gcgtagaacg tggacttgat ccattgaaga caatgcttgt ggtcatgagc aattctgaaa 60
atcaggtgg cctgggtactc gctgcttccc ctatggcaaa aaaagtatta ggtatttcca 120
atgttacaag gaaaaatgaa gtccgggacc acccaaactt aattattgta cctccacgca 180
10 tgaaattata catgaagaaa aatcaagaaa ttaacaattt atataaccgc tttgtttcta 240
atgaagatca ttctgtattc agtgtogatg aatcgtttct tgatgtgact gcttcgctga 300
cctattttta gtgtgacacc gcctataaac tggccaagat tattcaacgt gtgatttata 360
15 accatatggg attgtatgta acaatcggaa ttggggaaaa tccgttgctg gccaagttag 420
cattggataa tgaagcaaag aatgcaccag gctttgtggc tgaatggcgc tatgaagatg 480
tgccagaaaa agtttggcca atctccctc ttacagaatt ttgtgggata ggaaatcgca 540
20 tggctgctcg cttaaaaaag ctaggtattc ggtccattta tga 583

<210> 910
<211> 231
<212> DNA
<213> Candida albicans

<400> 910

25 atggcttggt ctgctgctca atgtgtctgt gctcaaaaat ccacttggtc atgtggtaaa 60
30 caaccagctt taaaatgtaa ttgttctaaa gcttcagtag aaaatgttgt tccatcatca 120
aatgatgctt gtgcttgtgg aaaaagaaat aaatcaagtt gtacttgtgg tgctaagtct 180
atgtgtgatg gtactagaga tgggtgaaact gatttcacta acttgaaata a 231
35

<210> 911
<211> 240
<212> DNA
<213> Candida albicans

<400> 911

40 ctaagatgtc gtcgcaagat gaatctaaat tagaaaaggc aattagtcaa gactcttctt 60
cagaaaacca ttccattaat gaataccacg ggtttgatgc ccatacaagt gaaaacattc 120
45 agaatttagc cagaactttc actcatgatt ctttcaaaga tgactcgtca gcagggttat 180
tgaaatactt aacctatatg tcagaagtgc ccgggggtcaa tccatatgaa catgaagaaa 240

<210> 912
<211> 513
<212> DNA
<213> Candida albicans

<400> 912

55 gctgaattat ctaaattacc aagagataat gatocagaag cacttttgaa atatgctgca 60

EP 1 770 171 A1

	ccacttttggga aacaatactt attggtcagt tggagaacta ttgttcaaga ttggagatca	120
	ccaggatata tttattctaa aatctttttg gttgtttcag cagcattatt taatggattt	180
5	tcattttttca aagctaaaaa caacatgcaa ggtttacaaa atcaaagtgt ttcggtgttt	240
	atgttttttca ttccatttaa tactttgggtg caacaaatgt taccatactt tgtgaagcaa	300
	cgtgatgttt atgaagtgag agaagctcca tcaagaacat tcagttgggt tgcattttatt	360
10	gccggtcaaaa ttacatcaga aattccttat caagttgccg ttggtaccat agcattttttc	420
	tgttgggtatt atccattagg attgtataat aatgotacac caactgattc tgtcaatcct	480
	cgaggtgttt taatgtggat gcttgttact gca	513
15		
	<210> 913	
	<211> 609	
	<212> DNA	
	<213> Candida albicans	
20		
	<400> 913	
	ggtggtaaat taagagattt ggtcatccgt gatgctccac tcaaacaaca attattgcaa	60
	gaagctaaaa ctttacctgc tttagcgtta actgotagac aattatgtga tttagaatta	120
25	attttaaacg gagggttttc tccattaact ggattcttaa atcaagaaga ttataatagt	180
	gttggttaacg atttaagatt aagtagtggt aagaatgaat caaatggtaa aggtttatta	240
	tggccaatcc caatcacctt agatgttgat gagaccactt ctaaaaaaca ttctgttggt	300
30	gatagaattg tattaataga tttagagat gaaactccat tggccatttt aactattgaa	360
	tctattttata aacctgataa aaaattagaa gcaaaaaaag tgttccgtgg tgatccagaa	420
	catcctgcta ataaatattt attagaaacc gctggcgatt attatatcgg tgggtgaatta	480
35	caagggatca attatcctaa acattatgat tatgttgatg ctagaaaaac accaactgaa	540
	ttgagacaag aatttgaaaa attgggttgg gctcaagaaa atattgttgc ctttcaaacc	600
	agaaatcct	609
40		
	<210> 914	
	<211> 528	
	<212> DNA	
	<213> Candida albicans	
45		
	<400> 914	
	tcatggatta ttgttcgtg gtgctaacca aatggatggg ccagagatgg ttaccagtg	60
	tcctatccca cctggtgaaa catacttgta caacttact gttactgatc aagtgggaac	120
50	ttattgggtat catagccata caggggggtca gtatggagac ggtatgagag gtgtctttat	180
	tattgaagat gatgatttcc cgtatcacta cgatgaagaa gttgttttaa ctttaagtga	240
	ccattaccac aaatattcag gtgacatagg gcctgccttt ttaaccagat ttaatccgac	300
55	aggagcagaa ccgatccctc agaacttttt gttcaatgaa acaagaaatg ccacttgga	360

EP 1 770 171 A1

5 ggtcgaacct ggaaaaactt actttgttag gattcttaat gttggtggtt ttgtatcaca 420
 gtacttgtgg atggaagatc atgaatttac tattgttgag atcgatggcg tttacgttga 480
 aaaaaacacc actgatttga tttatatcac agttgctcaa agatatgg 528

 10 <210> 915
 <211> 585
 <212> DNA
 <213> Candida albicans

 15 <400> 915
 aaacggtcca gagttgaaga aaaagttgta tcgtcagatt tggctagggg cggggctagg 60
 tgttcttatt tgtataatca ttggtggcgc ttttattggt accttttacg gggtgggtaa 120
 agatatctgg ggaaaatcag aagacttggt ggaagggata ttttgtatca ttgccacagt 180
 20 cttagatcact gctatgggta ttccaatggt gagaatcaac aagatgaaag aaaaatggag 240
 agttaaatta gcacaagctt taatcaaadc tccagaaaat aagaagaacc gattcaaatt 300
 gggatatctt gggaaaaagt acgcactttt tattttgccca ttcactactt gcttgcgtga 360
 25 aggtttagaa gctgttgttt tcgttgggtg ggctgggtatt actagtcctg cttcatcttt 420
 cccaatccca gttattgttg gtataatttg tgggtcttgc gtgggtgcct tgttgtacta 480
 ctttggttcc aatatgtcga tgcaaatctt cttagatcac tccacttgta tcttgtactt 540
 30 gatcgctgct ggtttgttct ccagaggtgt ctggttcttt gagag 585

 35 <210> 916
 <211> 560
 <212> DNA
 <213> Candida albicans

 40 <400> 916
 tgttattggt tatggtgttg gccattggt tttcagtcg atgtcagaaa atgctatatt 60
 tggtcgtaca tccatatata tcataacatt atttttattt gtcatactac aaatccccac 120
 tgctttggta aataatattg ccggtttatg tatattgaga ttcttgggtg gattctttgc 180
 tagtccttgt ttggccactg gtggtgctag tgttgcctgat gtggttaaatt tttggaattt 240
 45 accagttggg ttagccgctt ggagtttggg tgcctgttgt ggtcctagtt ttggtccatt 300
 ctttggttca attttaactg tcaaagccag ttggagatgg actttttggt tcatgtgtat 360
 tatttctggg ttttcatttg ttatgttgtg tttoacttta cctgaaactt ttggcaaac 420
 50 attattgtat cgcaaggcta aaagattgag agccatcac ggtaacgaca gaatcacaag 480
 tgaaggagaa attgaaaata gcaaatgac aagtcatgaa ttgatcattg atacattatg 540
 gagaccatta gaaatcacccg 560

 55 <210> 917

EP 1 770 171 A1

<211> 574
 <212> DNA
 <213> Candida albicans

5 <400> 917
 attccttggt ttggttctgc agcttcatat ggtcaacaac cttatgaatt tttcgaatca 60
 tgtcgtcaaaa agtatggtga tgtattttca tttatgttat tagggaaaat tatgacgggt 120
 10 tatttaggtc caaaagggtca tgaatttggt ttcaatgcta aattatctga tgtttctgct 180
 gaagatgctt ataaacattt aactactcca gttttcggta aaggggttat ttatgattgt 240
 ccaaattcta gattaatgga acaaaaaaaaaa tttgctaaat ttgctttgac tactgattca 300
 15 tttaaaagat atgttcctaa gattagagaa gaaattttga attattttgt tactgatgaa 360
 agtttcaa at tgaagaaaa aactcacggg gttgccaatg ttatgaaaac tcaaccagaa 420
 attactat ttcactgcttc aagatcttta tttggtgatg aaatgagaag aatttttgac 480
 20 cgttcatttg ctcaattata ttctgattta gataaagggt ttacccttat taattttggt 540
 ttccttaatt tacctttacc tcattattgg agac 574

25 <210> 918
 <211> 647
 <212> DNA
 <213> Candida albicans

30 <400> 918
 gctctttgct tcaattatcc gaagctgaag atgaatctgt ctacaaggcc agctttgatg 60
 acaccgtgca agaaattgat ctgttattga ttgctttcaa agacctcctt agacttttac 120
 gacccaaaga taaatccaac aaattcgata catacgaatt gaaatttcat tctttgaagc 180
 35 acaaattgctg tgagttgcaa gtatttatta atgatcaaca acaagacaag ttgcatgaat 240
 ataggataaa gcattttccat ctacaagatc tgctgtgga taccatcaat aacgaatttg 300
 ctcgagacca attatttgct gatcggtcca ctaagaagac taagaaagaa atggaagcat 360
 40 ctataaatca acaaattgtc agccaaaata aacaaataac aaaatccttg caagcatcga 420
 gacaattggt atcagcaggt atattgcaga gtgaattgaa cattgacaac attgatcagc 480
 aaaccaagga tttatacaag ttaaatagaag gatttatcca attcaacgat ttgttaaata 540
 45 gatctaagaa aattgtcaag tttattgaaa agcaagataa agctgaccgt caacgtatat 600
 atttgagtat ggggttcttc atactttggt gttcttgggt ggtttat 647

50 <210> 919
 <211> 552
 <212> DNA
 <213> Glycine max

55 <400> 919
 atccaagttg aaagagataa attgaacaag tatggtcgtc ccctattagg atgtactatt 60

EP 1 770 171 A1

	aaacctaaat tgggggttatc cgctaagaat tatggtagag ctgtttatga atgtcttcgt	120
	gggtggacttg attttaccaa agatgatgaa aatgtgaatt cccaaccatt tatgcgttgg	180
5	agagaccggt tcttattttg tgccgaagcc atttttaaatt cacaggctga aacagggtgaa	240
	atcaaagggc attacttgaa tgcaactgcg ggtacatgcg aagaaatgat gaaaagagct	300
	gtatttgcca gagaattagg cgttcctatc gtaatgcatg attatttaac agggggattc	360
10	actgcaaata ctagcttagc tcattattgc cgagataatg gtctacttct tcatatacac	420
	cgtgcaatgc atgcagttat cgacagacaa aagaatcatg gtatgcactt tcgtgtacta	480
	gctaaagcat tacgtttgtc tgggtggagat catgttcacg ccggtaccgt agtaggtaaa	540
15	cttgaagggg aa	552
	<210> 920	
	<211> 358	
20	<212> DNA	
	<213> Homo sapiens	
	<400> 920	
	gctcaagggg caaatgcagc atgtacagca ttggcagtgg tgcctcagag gtggcagaac	60
25	tatttcacac aaaccagttt aggactacac aaattagtag catccagcat caggatatag	120
	ctgtggattt tacaaccat tcctatttct aacttcagga attgatgttt ttcccagtc	180
	atcttaaaat attactgctt taatcacaga tcagataaaa aggatatcag gcacaacctc	240
30	caactaaagt cctgtttag catagacagt gaaatgctat gacatcagaa gactttaaaa	300
	ttgcagctct ttccggatcc cccaaagtgt gtctgcacgc ttcttcaaac gggcctct	358
35	<210> 921	
	<211> 271	
	<212> DNA	
	<213> Homo sapiens	
	<400> 921	
40	cggagtcaac ggatttggtc gtattggatg cctggtcacc agggttgctt ttaactctgg	60
	aaaagtggat attgtcgcca tcaatgaccg cttcattgac ctcaactaca tggctctacat	120
	gttccagtag gattttacct atggcaaatt ccatgcaccg taaaggctga gaatgggaag	180
45	cttgtcatca gtggaaatcc cattaccatc ttccaggagc gagatccctc caaaatcaaa	240
	tggggcaatg ctgacgctga gtacgttgtg g	271
50	<210> 922	
	<211> 239	
	<212> DNA	
	<213> Homo sapiens	
	<400> 922	
55	atggataatg atatcgccac gctcgtcatg gacaatggct ctccatgtg caaggccagc	60

EP 1 770 171 A1

	ttagcaggcg acgatgcccc tccatcgtga ggcacccatg gcaccagggc atgatcgtgg	120
	gcatgggtca gaagaagtcc tacgtggaca atgaggccca gggcaagaga agcatcctga	180
5	cctgaaata cctatcgag catggcattg tcaccaatgg agaagatctg gcaccacac	239
	<210> 923	
	<211> 365	
10	<212> DNA	
	<213> Homo sapiens	
	<400> 923	
	gccaaattgc caaaactcaa gtcacctcag taccatccag gaggctgggt attgtcctgc	60
15	ctctgccttt tctgtctcag cgggcagtgc ccagagccca cccccccca agagccctcg	120
	atggacagcc tcaccacccc cacctgggcc cagccaggag ccccgccctgg ccatcagtat	180
	ttattgcctc cgtccgtgcc gtccctgggc cactggcctg gcgcctgttc cccaggtctc	240
20	tcagtgccac ccccccggc aggccttccc tgaccagcc aggaacaaac aagggaacaa	300
	gtgcacacat tgctgagagc cgtctcctgt gcctcccccg ccccatcccc ggtcttcgtg	360
	ttgtg	365
25		
	<210> 924	
	<211> 342	
	<212> DNA	
	<213> Homo sapiens	
30	<400> 924	
	caccctggat ttgcatacat tcttcaagat cccatttgaa ttttttagtg actaaaccat	60
	tgtgcattct agagtgcata tatttatatt ttgcctgtta aaaagaaagt gagcagtgtt	120
35	agcttagttc tcttttgatg taggttatta tgattagctt tgtcactgtt tcactactca	180
	gcatggaaac aagatgaaat tccatttgta ggtagtgaga caaaattgat gatccattaa	240
	gtaaacaata aaagtgtcca ttgaaaccgt gatttttttt tttttcctgt catactttgt	300
40	taggaagggt gagaatagaa tcttgaggaa cggatcagat gt	342
	<210> 925	
	<211> 552	
45	<212> DNA	
	<213> Glycine max	
	<400> 925	
	atccaagttg aaagagataa attgaacaag tatggtcgtc ccctattagg atgtactatt	60
50	aaacctaaat tggggttatc cgctaagaat tatggtagag ctgtttatga atgtcttctg	120
	ggtggacttg attttaccaa agatgatgaa aatgtgaatt cccaaccatt tatgcgttgg	180
	agagaccgtt tcttattttg tgccgaagcc atttttaaata cacaggctga aacaggtgaa	240
55	atcaaagggc attacttgaa tgcaactgcg ggtacatgcg aagaaatgat gaaaagagct	300

EP 1 770 171 A1

	gtattttgcc	gagaattagg	cgttcctatc	gtaatgcatg	attattttaac	agggggattc	360
	actgcaaata	ctagcttagc	tcattattgc	cgagataatg	gtctacttct	tcataatacac	420
5	cgtgcaatgc	atgcagttat	cgacagacaa	aagaatcatg	gtatgcactt	tcgtgtacta	480
	gctaaagcat	tacgtttgtc	tggtaggat	catgttcacg	cgggtaccgt	agtaggtaaa	540
	cttgaagggg	aa					552
10							
	<210> 926						
	<211> 286						
	<212> DNA						
	<213> Pseudomonas aeruginosa						
15							
	<400> 926						
	caggcctaac	acatgcaagt	cgagcggatg	aaggagactt	gtcctggat	tcagcggcgg	60
	acgggtgagt	aatgcctagg	aatctgcctg	gtagtggggg	ataacgtccg	gaaacgggcg	120
20	ctaataccgc	atacgtcctg	aggagaaaag	tgggggatct	tcggacctca	cgctatcaga	180
	tgagcctagg	tcggattagc	tagttggtgg	ggtaaaggcc	taccaaggcg	acgatccgta	240
	actggtctga	gaggatgac	agtcacactg	gaactgagac	acggtc		286
25							
	<210> 927						
	<211> 643						
	<212> DNA						
	<213> Enterococcus faecium						
30							
	<400> 927						
	aggataggta	ggagccgtag	aaatcggaac	gctagtttcg	atggaggcgc	tggtaggata	60
	ctaccctgc	gttatggcca	ctctaaccgc	caccactaat	cgtggtaggga	gacagtgtca	120
35	gatgggcagt	ttgactgggg	cggtcgcctc	ctaaaaggta	acggaggcgc	ccaaaggttc	180
	cctcagaatg	gttggaatc	attcgaagag	tgtaaaggca	gaaggagct	tgactgcgag	240
	accaacaagt	cgagcaggga	cgaaagtcgg	gcttagtgat	cggtaggttc	cgcatggaag	300
40	ggccatcgct	caacggataa	aagctaccct	ggggataaca	ggcttatctc	ccccaaagat	360
	ccacatcgac	ggggagggtt	ggcacctcga	tgtcggctcg	tcgcctcctg	gggtgtagt	420
	cggccccaa	ggttgggctg	ttcgccatt	aaagcggcac	gcgagctggg	ttcagaacgt	480
45	cgtgagacag	ttcggtccct	atccgtcgcg	ggcgttgga	atttgagagg	agctgtcctt	540
	agtacgagag	gaccgggatg	gacttaccgc	tgggtgtacca	gttggttctgc	caagggtttt	600
	gctgggtagc	tatgtaggga	agggataaac	gctgaaagca	tct		643
50							
	<210> 928						
	<211> 245						
	<212> DNA						
	<213> Streptococcus pyogenes						
55							
	<400> 928						

EP 1 770 171 A1

	gcgtgagtga aagaaggttt tcggatcgta aagctctgtt gttagagaag aatgatggtg	60
	ggagtggaaa atccaccaag tgacggtaac taaccagaaa gggacggcta actacgtgcc	120
5	agcagccgcg gtaatacgta ggtcccagc gttgtccgga tttattgggc gtaaagcgag	180
	cgcagggcgt tttttaagtc tgaagttaaa ggcattggct caaccaatgt acgctttgga	240
	aactg	245
10		
	<210> 929	
	<211> 240	
	<212> DNA	
	<213> Streptococcus pneumoniae	
15		
	<400> 929	
	ccacactggg actgagacac ggcccagact cctacgggag gcagcagtag ggaatcttcg	60
	gcaatggacg gaagtctgac cgagcaacgc cgcgtgagtg aagaaggttt tcggatcgta	120
20	aagctctgtt gtaagagaag aacgagtgtg agagtggaaa gttcacactg tgacggtatc	180
	ttaccagaaa gggacggcta actacgtgcc agcagccgcg gtaatacgta ggtcccagc	240
25		
	<210> 930	
	<211> 242	
	<212> DNA	
	<213> Streptococcus agalactiae	
30		
	<400> 930	
	cacggcccag actcctacgg gaggcagcag tagggaatct tcggcaatgg acggaagtct	60
	gaccgagcaa cgccgcgtga gtgaagaagg ttttcggatc gtaaagctct gttgttagag	120
	aagaacgttg gtaggagtgg aaaatctacc aagtgcagggt aactaaccag aaagggacgg	180
35	ctaactacgt gccagcagcc gcgtaatac gtaggtcccg agcgttgtcc ggatttattg	240
	gg	242
40		
	<210> 931	
	<211> 250	
	<212> DNA	
	<213> Enterococcus faecium	
45		
	<400> 931	
	gtgcattagc tagttggtga ggtaacggct caccaaggcc acgatgcata gccgcacctg	60
	agagggatgat cgccacatt gggactgaga cacggcccaa actctacggg aggcagcagt	120
	agggaaatctt cggcaatgga cgaaagtctg accgagcaac gccgcgtgag tgaagaaggt	180
50	tttcggatcg taaaactctg ttgttagaga agaacaagga tgagagtaac tgttcacccc	240
	ttgacggtat	250
55		
	<210> 932	
	<211> 263	
	<212> DNA	

EP 1 770 171 A1

<213> Enterococcus faecium

<400> 932

5 tgcctataca tgcaagtcga acgcttcttt ttccaccgga gcttgctcca ccggaaaaag 60

aggagtggcg aacgggtgag taacacgtgg gtaacctgcc catcagaaag ggataaact 120

tggaacacag tgctaatacc gtataacaaa tcaaaaccgc atggttttga tttgaaaggc 180

10 gctttcgggt gtcgctgatg gatggaccgc cggtgcatta gctagttagt gaggtaacgg 240

ctcaccaagg ccacgatgca tag 263

<210> 933

15 <211> 267

<212> DNA

<213> Enterococcus faecalis

<400> 933

20 ggcgtgcta atacatgcaa gtcgaacgct tctttcctcc cgagtgcttg cactcaattg 60

gaaagaggag tggcggacgg gtgagtaaca cgtgggtaac ctacccatca gagggggata 120

acacttgga acaggtgcta ataccgcata acagtttatg ccgcatggca taagagtga 180

25 aggcgctttc ggggtgctgct gatggatgga cccgcgggtgc attagctagt tggtagagta 240

acggctcacc aaggcgacga tgcatag 267

<210> 934

30 <211> 200

<212> DNA

<213> Klebsiella pneumoniae

<400> 934

35 caggcctaac acatgcaagt cgagcggtag cacagagagc ttgctctcgg gtgacgagcg 60

gcggacgggt gagtaatgtc tgggaaactg cctgatggag ggggataact actggaaacg 120

gtagctaata ccgcataatg tcgcaagacc aaagtggggg accttcgggc ctcatgccat 180

40 cagatgtgcc cagatgggat 200

<210> 935

<211> 635

<212> DNA

45 <213> Staphylococcus aureus

<400> 935

acacggtcca gactcctacg ggaggcagca gtagggaatc ttccgcaatg ggcgaaagcc 60

tgacggagca acgcccgtg agtgatgaag gtcttcggat cgtaaaactc tggtattagg 120

50 gaagaacata tgtgtaagta actgtgcaca tcttgacggg acctaatcag aaagccacgg 180

ctaactacgt gccagcagcc gcggtaatac gtaggtggca agcgttatcc ggaattattg 240

ggcgtaaagc gcgcgtaggc ggttttttaa gtctgatgtg aaagcccacg gctcaaccgt 300

55 ggagggcatc tggaaaactg aaaacttgag tgcagaagag gaaagtggaa ttccatgtgt 360

EP 1 770 171 A1

	agcgggtgaaa tgcgcagaga tatggaggaa caccagtggc gaaggcgact ttctggtctg	420
5	taactgacgc tgatgtgcga aagcgtgggg atcaaacagg attagatacc ctggtagtcc	480
	acgccgtaaa cgatgagtgc taagtgttag ggggtttccg ccccttagtg ctgcagctaa	540
	cgcattaagc actccgcctg gggagtagca ccgcaagggt gaaactcaaa ggaattgacg	600
10	gggacccgca caagcgtgga gcatgtggtt taatt	635
	<210> 936	
	<211> 243	
	<212> DNA	
15	<213> Enterococcus faecalis	
	<400> 936	
	gcattagcta gttggtgagg taacggctca ccaaggcgac gatgcatagc cgacctgaga	60
	gggtgatcgg ccacactggg actgagacac ggcccagact cctacgggag gcagcagtag	120
20	ggaatcttcg gcaatggacg aaagtctgac cgagcaacgc cgcgtgagtg aagaaggttt	180
	tcggatcgta aaactctgtt gttagagaag aacaaggacg ttagtaactg aacgtccct	240
25	gac	243
	<210> 937	
	<211> 274	
	<212> DNA	
30	<213> Staphylococcus hominis	
	<400> 937	
	cgtgcctaatt acatgcaagt cgagcgaaca gacgaggagc ttgctccttt gacgttagcg	60
	gcggacgggt gagtaacacg taggtaacct acctataaga ctgggataac ttcgggaaac	120
35	cggagctaatt accggataat atttcgaacc gcatggttcg atagtgaaag atggctttgc	180
	tatcaattat agatggacct gcgcgtatt agctagttgg taaggtaacg gcttaccaag	240
40	gcaacgatac gtagccgacc tgagaggggtg atcg	274
	<210> 938	
	<211> 200	
	<212> DNA	
45	<213> Staphylococcus haemolyticus	
	<400> 938	
	acacgtgggt aacctaccta taagactggg ataacttcgg gaaaccggag ctaataccgg	60
	ataatatattc gaaccgcatg gttcgatagt gaaagatggt tttgctatca ottatagatg	120
50	gacccgcgcc gtattagcta gttggttaagg taacggctta ccaaggcgac gatacgtagc	180
	cgacctgaga gggatgacgg	200
55	<210> 939	
	<211> 287	

EP 1 770 171 A1

	<212> DNA	
	<213> Enterococcus faecium	
	<400> 939	
5	ccttttaggtg tatttgtagg agagcgttct aagggcgctcg aaggcagatc gtgaggactg	60
	ctggagcgct tagaagttag aatgccggtg tgagtagcga aagacagggtg agaatcctgt	120
	ccaccgaatg actaagggtt cctggggaag gctcgctccg ccagggttag tcgggacctg	180
10	agccgaggcc gacaggcgta ggcgatggat aacagggttg tattcctgta cccgttggtt	240
	ttgtttgagc aatggaggga cgcaggagga taaggaatgc agaagat	287
15	<210> 940	
	<211> 281	
	<212> DNA	
	<213> Proteus mirabilis	
	<400> 940	
20	caggcctaac acatgcaagt cgagcggtaa caggagaaag cttgctttct tgctgacgag	60
	cggcggacgg gtgagtaatg tatggggatc tgcccgatag agggggataa ctactggaaa	120
	cggtggtctaa taccgcataa tgtctacgga ccaaagcagg ggctcttcgg accttgcaat	180
25	atcggatgaa cccatatggg attagctagt aggtggggta aaggctcacc taggcgacga	240
	tctctagctg gtctgagagg atgatcagcc aactgggac t	281
30	<210> 941	
	<211> 200	
	<212> DNA	
	<213> Proteus vulgaris	
	<400> 941	
35	tggttgatca tggctcagat tgaacgctgg cggcaggcct aacacatgca agtcgagcgg	60
	taacaggaga aagcttgctt tcttgctgac gagcggcgga cgggtgagta atgtatggg	120
	atctgccga tagaggggga taactactgg aaacggtggc taataccgca tgacgtctac	180
40	ggaccaaagc aggggtctct	200
45	<210> 942	
	<211> 309	
	<212> DNA	
	<213> Staphylococcus aureus	
	<400> 942	
	tctctgatgt tagcggcgga cgggtgagta acacgtggat aacctaccta taagactggg	60
50	ataacttcgg gaaaccggag ctaataccgg ataatatattt gaaccgcatg gttcaaaagt	120
	gaaagacggg cttgctgtca cttatagatg gatccgcgct gcattagcta gttggtaagg	180
	taacggctta ccaaggcaac gatgcatagc cgacctgaga gggatgatcg ccacactgga	240
55	actgagacac ggtccagact cctacgggag gcagcagtag ggaatcttcc gcaatgggag	300

EP 1 770 171 A1

	aaagcctga	309
5	<210> 943 <211> 183 <212> DNA <213> <i>Klebsiella oxytoca</i>	
10	<400> 943 ctaacacatg caagtcgaac ggtagcacag agagcttgct ctcggtgac gagtggcgga	60
	cggtgagta atgtctggga aactgcccga tggaggggga taactactgg aaacggtagc	120
	taataccgca taacgtcgca agaccaaaga gggggacctt cgggcctctt gccatcggat	180
15	gtg	183
20	<210> 944 <211> 548 <212> DNA <213> <i>Mus musculus</i>	
	<400> 944 ataggtcggc ggttcatgcc ccccatgcag gagctattac acatgtactt gtagtggatg	60
25	gtgtatact cagagccggc ctgggggaag acacaggatc cagggtgaagt cgctccctac	120
	ctcactacag gtgacctgca gcagccggga atggctggct atagcctcta ataagtttca	180
	gttttagttg tagagtaggg atattccacc tgttcggcac acctgctgga gctgtggggc	240
30	ccaacacttg cttagcatgg gaggggaaccg gactcagcgt ctctatttcc cgcctggatg	300
	gggaagcccc ttctcccaga gactgctgtt aaagtagacc ctgggctggg cacggcagct	360
	tgcacctcta agcctagcta gcactcagga ggggtgaggca aacgggttgc tagaaagtca	420
35	acatcagtct aggctggagt caactgtctc taagacgcac aaacaaaac aaaattacag	480
	acctcgggtg gtcataaagg taccaccacg ctgtggcgaa aagtctgcct gtcttcaga	540
40	tactcggg	548
45	<210> 945 <211> 577 <212> DNA <213> <i>Dictyostelium discoideum</i>	
	<400> 945 attggagaag gtgcagcagg agaagtatgt gtagcaacat catcaaagaa caataagaga	60
	gttgcaatta aaaagattga aattaacaat gataatgcca aactcttggg aacagagatt	120
50	gcaattatga agacatcaca tcatgataac attgtaaatt acattgatag ttatatagtg	180
	aacgatagag aactttgggt tgcaatggag tttatgggtg gtggttggtt aacagacatt	240
	ttagaggcat ttgataatat caaaatgagt gagattcaaa ttgcttatgt ggtaaagag	300
55	accttgaagg cattgcaata cattcatagt cttoatcgta ttoatagaga tataaagagt	360

EP 1 770 171 A1

	gataaatat ttt tattgggctc agagggtagt gtaaagattg ctgatttttg ttatgccgct	420
	caattaactc aaaaacaaca aaaacgtaat accgtcggtt gtaccacctta ttggatggcc	480
5	ccagaactca ttagagggtc cgattatggt gtcaagggtt atatttggtc tttgggtatc	540
	atgatgatgg aaatggctga aggtgaacca ccttata	577
10	<210> 946 <211> 963 <212> DNA <213> Mus musculus	
15	<400> 946 ggaagccaca ctgctacaca gggttgtcaa acgactttga ccttcccca gatgtgaggg	60
	catagtaact ataacatcag gttcctggaa aatttagctg aaagacagaa gcaagcactg	120
	aacatggccc cgagatctac gtaccgggta cccattgaga ggctggaaat acaggctggt	180
20	gtctgtaatg cacacatgcc cagggttcgt cactagaggt gttaccatct ctgctttgca	240
	ctccatgtgc agcttttcag aaacactttg gaacctgcaa agatgtttcc agcaaaagta	300
	agaaaagtta ggaaccaatc cactgcctcg gcttaacctc agtgtgagtg agottgctta	360
25	cctgccgaaa cactacagtc atcaagtggc tgcttaaata aggttgacat gctttcaa	420
	ggcacaatgg aggcctggct tgtttattaa ttgaagagct tacatatcac agaaacaa	480
	gtctcctaac tgatcagtc tgaagctctt tctccatcat gtgacttcct acttttat	540
30	tgtaagacc gacttttaga gcctacataa agagcagcgg tgctacgttt tatgccagca	600
	ctaggaggaa gctgagacag gagcttgggc cacagagaaa gacctaccc ttagcacact	660
	tcctttatca gggttagaac acataattac aattgctttt aggtcagttt catttctcca	720
35	tataaaacca ctcaaagatg ccttttctac tcctaaaatg cttaactaaa aaataactcc	780
	attttctgatt tgtgaattta aaaagtagtg tggaacaac taaattatca atattcttgg	840
40	atgattactt tgtaaaataa ctggattaac agtaaattc agggctctaga agtgcagctc	900
	ggtgctagag cagcgtgat catgctggag cctggctcag tcctggcacc gagataacta	960
	agg	963
45	<210> 947 <211> 538 <212> DNA <213> Dictyostelium discoideum	
50	<400> 947 ccaccgggtt aacttggat ccaaaagggt gagatgctaa atctgctaca ccagcaccag	60
	cttcacagc accagccgcc ccagttgcac cagctgtttc atccactcca gttgaatcaa	120
	agaaagggtc aggtttaggt gcagttttcg gtgaacttag caaaggatgat ggtgttacca	180
55	gtggtttaaa aaaagttacc aacgatatga aatccaaaaa tttcaccgac aaatcatcag	240

EP 1 770 171 A1

	ttgttaaagc tgctgatact aaagtcgcca aagttgatgc tccatctaga ccagccgttt	300
5	ttgctctcca aggtaacaaa tgggtccattg aatatcaagt taacaacaaa gaaattgtca	360
	ttgccgagcc agatagtcgt caaactgttt acattttcca atgtgtaaac tctttagttc	420
	aaatcaaagg taaagttaat gcaattactc ttgatggttg taaaaagact tcaatcgttt	480
10	tcgaaaatgc catttcctct tgtgaagttg tcaattgtaa tgggtgttgaa atccaagt	538
	<210> 948	
	<211> 26	
	<212> DNA	
15	<213> synthetic construct	
	<400> 948	
	taaattgttt agattacaat cagagg	26
20	<210> 949	
	<211> 22	
	<212> DNA	
	<213> synthetic construct	
25	<400> 949	
	ttcaaagttt tcgtatgttt ca	22
	<210> 950	
	<211> 19	
30	<212> DNA	
	<213> synthetic construct	
	<400> 950	
	cgtgtttggg ttaaattcc	19
35	<210> 951	
	<211> 20	
	<212> DNA	
	<213> synthetic construct	
40	<400> 951	
	ataatggtgt gttcctccac	20
	<210> 952	
45	<211> 20	
	<212> DNA	
	<213> synthetic construct	
	<400> 952	
	aaaagaaaaa cacgcaattc	20
50	<210> 953	
	<211> 20	
	<212> DNA	
	<213> synthetic construct	
55	<400> 953	

EP 1 770 171 A1

	cattcgtcaa ctgattcgtg	20
5	<210> 954 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 954 tagcatagca acaaacagtg a	21
15	<210> 955 <211> 21 <212> DNA <213> synthetic construct	
	<400> 955 gttttgacct gaagctgtat c	21
20	<210> 956 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 956 aacaaagcag atgcgatagt	20
30	<210> 957 <211> 20 <212> DNA <213> synthetic construct	
	<400> 957 gaaatacgat gcggtttatac	20
35	<210> 958 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 958 ctaggcgcat tagcagtt	18
45	<210> 959 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 959 tagccttctc ttccatttca	20
55	<210> 960 <211> 21 <212> DNA <213> synthetic construct	
	<400> 960	

EP 1 770 171 A1

	aatgctgcta acctgcgtga t	21
5	<210> 961 <211> 24 <212> DNA <213> synthetic construct	
10	<400> 961 cacgtctaac cgctttactg attg	24
15	<210> 962 <211> 30 <212> DNA <213> synthetic construct	
20	<400> 962 aaagtaaaga gtagactaag ctgtctgctc	30
25	<210> 963 <211> 25 <212> DNA <213> synthetic construct	
30	<400> 963 acctaataaa attcaagcat tggga	25
35	<210> 964 <211> 27 <212> DNA <213> synthetic construct	
40	<400> 964 aagaatttaa aatggtagg tgtagta	27
45	<210> 965 <211> 24 <212> DNA <213> synthetic construct	
50	<400> 965 acgtaatcgt ttgttgcca aata	24
55	<210> 966 <211> 22 <212> DNA <213> synthetic construct	
	<400> 966 aacgtcccat gccattaatt tt	22
	<210> 967 <211> 24 <212> DNA <213> synthetic construct	
	<400> 967	

EP 1 770 171 A1

	ttgcggtttct atttagctca gaca	24
5	<210> 968 <211> 23 <212> DNA <213> synthetic construct	
10	<400> 968 acagagcagc aaaagcggtta gtg	23
15	<210> 969 <211> 24 <212> DNA <213> synthetic construct	
	<400> 969 gaccttgaat gaaccattga ccat	24
20	<210> 970 <211> 30 <212> DNA <213> synthetic construct	
25	<400> 970 catatggtga ttttacattc ttottaattg	30
30	<210> 971 <211> 28 <212> DNA <213> synthetic construct	
	<400> 971 cctaaccatg tactttgtaa cactttca	28
35	<210> 972 <211> 29 <212> DNA <213> synthetic construct	
40	<400> 972 aaatttatta gcagaagtag cagaaaatg	29
45	<210> 973 <211> 27 <212> DNA <213> synthetic construct	
	<400> 973 ctgaactett ctaatgcttc aacgatt	27
50	<210> 974 <211> 24 <212> DNA <213> synthetic construct	
55	<400> 974	

EP 1 770 171 A1

	tttaggcgaa aatattggtg aaga	24
5	<210> 975 <211> 24 <212> DNA <213> synthetic construct	
10	<400> 975 ttgtcgctcg tcttttactt cgtt	24
15	<210> 976 <211> 26 <212> DNA <213> synthetic construct	
	<400> 976 ggtcttatcg ttgcagctat cactat	26
20	<210> 977 <211> 26 <212> DNA <213> synthetic construct	
25	<400> 977 gagcgtatcg cataaataat cttttc	26
30	<210> 978 <211> 24 <212> DNA <213> synthetic construct	
	<400> 978 tcaggtgaaa tgtagaatc agca	24
35	<210> 979 <211> 23 <212> DNA <213> synthetic construct	
40	<400> 979 taagtcacca aataagaatg gcg	23
45	<210> 980 <211> 21 <212> DNA <213> synthetic construct	
50	<400> 980 tagtcaccat gaagttgccc c	21
55	<210> 981 <211> 23 <212> DNA <213> synthetic construct	
	<400> 981	

EP 1 770 171 A1

	cctcttgaag atggtacacg gat	23
5	<210> 982 <211> 22 <212> DNA <213> synthetic construct	
10	<400> 982 cgaatgatgc aatcagacga aa	22
15	<210> 983 <211> 23 <212> DNA <213> synthetic construct	
	<400> 983 caccacgatt tattggcaaa gtt	23
20	<210> 984 <211> 23 <212> DNA <213> synthetic construct	
25	<400> 984 ttgaatcacc aaattgaggt tgt	23
30	<210> 985 <211> 25 <212> DNA <213> synthetic construct	
	<400> 985 cagtcgttca gatttgaatt tcttt	25
35	<210> 986 <211> 28 <212> DNA <213> synthetic construct	
40	<400> 986 aaatccatcg agatggtaat atatatca	28
45	<210> 987 <211> 31 <212> DNA <213> synthetic construct	
50	<400> 987 aaacttaaaa tactttctga atattgatca t	31
55	<210> 988 <211> 23 <212> DNA <213> synthetic construct	
	<400> 988	

EP 1 770 171 A1

	gtatgcaatt tgatcgtggt tat	23
5	<210> 989 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 989 tgtaaatgca tcgccttcaa c	21
15	<210> 990 <211> 30 <212> DNA <213> synthetic construct	
	<400> 990 atgtatgtta gcactcttta atgttaagtg	30
20	<210> 991 <211> 24 <212> DNA <213> synthetic construct	
25	<400> 991 gtttagttgt gtttcatttt cgtt	24
30	<210> 992 <211> 29 <212> DNA <213> synthetic construct	
	<400> 992 tgtcatatta tcaacatgta atcgaactg	29
35	<210> 993 <211> 29 <212> DNA <213> synthetic construct	
40	<400> 993 aatatcagta attccagaac caagaagat	29
45	<210> 994 <211> 26 <212> DNA <213> synthetic construct	
50	<400> 994 aaaatgatca aaggtgaaga aacato	26
55	<210> 995 <211> 25 <212> DNA <213> synthetic construct	
	<400> 995	

EP 1 770 171 A1

	aatcctcgac atttaatgca cctac	25
5	<210> 996 <211> 27 <212> DNA <213> synthetic construct	
10	<400> 996 aatgggatta ttagttatgg cttatgg	27
15	<210> 997 <211> 26 <212> DNA <213> synthetic construct	
	<400> 997 gtggatatgg atcattattc ttttcg	26
20	<210> 998 <211> 27 <212> DNA <213> synthetic construct	
25	<400> 998 atgagatata cgaaatcaga agaagca	27
30	<210> 999 <211> 32 <212> DNA <213> synthetic construct	
	<400> 999 ctaatcttaa agtatccaat gtagcttctg ta	32
35	<210> 1000 <211> 29 <212> DNA <213> synthetic construct	
40	<400> 1000 aaacagcaag atcctaatat tgatgtaac	29
45	<210> 1001 <211> 32 <212> DNA <213> synthetic construct	
50	<400> 1001 ctctacgtac aatcgatact aattcattat ct	32
55	<210> 1002 <211> 26 <212> DNA <213> synthetic construct	
	<400> 1002	

EP 1 770 171 A1

	attaacaaaa ttgatttacc tgctgc	26
5	<210> 1003 <211> 27 <212> DNA <213> synthetic construct	
10	<400> 1003 ctataaccaa aacctaatagc ttgtgac	27
15	<210> 1004 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1004 aaagacgcat caaaaccagc a	21
20	<210> 1005 <211> 29 <212> DNA <213> synthetic construct	
25	<400> 1005 ggctaatacgac acctaaagag ttaacaact	29
30	<210> 1006 <211> 28 <212> DNA <213> synthetic construct	
35	<400> 1006 gattaaccac ttagcactaa acacacct	28
40	<210> 1007 <211> 24 <212> DNA <213> synthetic construct	
	<400> 1007 aatgtttaac aagcacttca cgct	24
45	<210> 1008 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1008 cgacaaacac ccaacaagca	20
55	<210> 1009 <211> 22 <212> DNA <213> synthetic construct	
	<400> 1009	

EP 1 770 171 A1

	tggtctgttat acgcttggtt gt	22
5	<210> 1010 <211> 28 <212> DNA <213> synthetic construct	
10	<400> 1010 gttatcgtat taactggtga aggtgatt	28
15	<210> 1011 <211> 26 <212> DNA <213> synthetic construct	
	<400> 1011 acatttagta cattaccgcc acctac	26
20	<210> 1012 <211> 25 <212> DNA <213> synthetic construct	
25	<400> 1012 cgtaagggaa gtagttatca gtccg	25
30	<210> 1013 <211> 26 <212> DNA <213> synthetic construct	
	<400> 1013 ttagctgtat actcgaaatc caatcc	26
35	<210> 1014 <211> 28 <212> DNA <213> synthetic construct	
40	<400> 1014 atggactttt gggtatataa acaagcac	28
45	<210> 1015 <211> 25 <212> DNA <213> synthetic construct	
50	<400> 1015 tatttcagca atgtcacccg tatta	25
55	<210> 1016 <211> 26 <212> DNA <213> synthetic construct	
	<400> 1016	

EP 1 770 171 A1

	attgataatt tacatccaac acctgc	26
5	<210> 1017 <211> 29 <212> DNA <213> synthetic construct	
10	<400> 1017 tcactatctg gatcagaatc tttaacaat	29
15	<210> 1018 <211> 31 <212> DNA <213> synthetic construct	
	<400> 1018 atgaggtact ctttaattag tggatatcttg a	31
20	<210> 1019 <211> 25 <212> DNA <213> synthetic construct	
25	<400> 1019 atcagctaata gaaatgaaga ttgca	25
30	<210> 1020 <211> 27 <212> DNA <213> synthetic construct	
35	<400> 1020 gaaaatacag aacttgatgg tgaaatg	27
40	<210> 1021 <211> 27 <212> DNA <213> synthetic construct	
	<400> 1021 gcaagactca catacaccat aaacttc	27
45	<210> 1022 <211> 27 <212> DNA <213> synthetic construct	
50	<400> 1022 tcgtttacat cataataatc atcagac	27
55	<210> 1023 <211> 24 <212> DNA <213> synthetic construct	
	<400> 1023	

EP 1 770 171 A1

	acacagagaa taaccaggag aaga	24
5	<210> 1024 <211> 26 <212> DNA <213> synthetic construct	
10	<400> 1024 ttgtaattca cttaacttca ccaatg	26
15	<210> 1025 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1025 tcaagttgcg aaattagctg a	21
20	<210> 1026 <211> 25 <212> DNA <213> synthetic construct	
25	<400> 1026 actcaaacag ttagcaagat tgctc	25
30	<210> 1027 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1027 tgcatttacc caaccagtgc	20
35	<210> 1028 <211> 27 <212> DNA <213> synthetic construct	
40	<400> 1028 ggtgttccaa actcaaaaga tgatata	27
45	<210> 1029 <211> 30 <212> DNA <213> synthetic construct	
50	<400> 1029 ttgacaccat aatcattat aggaatattg	30
55	<210> 1030 <211> 24 <212> DNA <213> synthetic construct	
	<400> 1030	

EP 1 770 171 A1

	aacacaatcg gaaatgttgg atac	24
5	<210> 1031 <211> 25 <212> DNA <213> synthetic construct	
10	<400> 1031 ctatcccaat ccatagacgt gttaa	25
15	<210> 1032 <211> 24 <212> DNA <213> synthetic construct	
	<400> 1032 tgacatttca aatcaatcac atcg	24
20	<210> 1033 <211> 24 <212> DNA <213> synthetic construct	
25	<400> 1033 ttggtaacca aacattttca gctt	24
30	<210> 1034 <211> 27 <212> DNA <213> synthetic construct	
	<400> 1034 ctggagatac tattgaagaa gacgatg	27
35	<210> 1035 <211> 28 <212> DNA <213> synthetic construct	
40	<400> 1035 ttgcttttac agttctgttt tcatctac	28
45	<210> 1036 <211> 30 <212> DNA <213> synthetic construct	
50	<400> 1036 tagttatoga gattatcaaa gattggtaga	30
55	<210> 1037 <211> 27 <212> DNA <213> synthetic construct	
	<400> 1037	

EP 1 770 171 A1

	gtaattgtga gtgtccataa gaatcca	27
5	<210> 1038 <211> 30 <212> DNA <213> synthetic construct	
10	<400> 1038 tgaatcttaa tatagaaaca accactcaag	30
15	<210> 1039 <211> 24 <212> DNA <213> synthetic construct	
	<400> 1039 acgatctgac acacctaataa tgta	24
20	<210> 1040 <211> 24 <212> DNA <213> synthetic construct	
25	<400> 1040 tctaaagaag attttatcga aatg	24
30	<210> 1041 <211> 24 <212> DNA <213> synthetic construct	
	<400> 1041 cccacattgt tattttcttt gtat	24
35	<210> 1042 <211> 26 <212> DNA <213> synthetic construct	
40	<400> 1042 tgagatagat gcaatcatgt ttatgg	26
45	<210> 1043 <211> 32 <212> DNA <213> synthetic construct	
50	<400> 1043 gaaataggta caatctctgt aaagtcata ta	32
55	<210> 1044 <211> 30 <212> DNA <213> synthetic construct	
	<400> 1044	

EP 1 770 171 A1

	aatataattg ggaagaagta catcaagaag	30
5	<210> 1045 <211> 27 <212> DNA <213> synthetic construct	
10	<400> 1045 atattagcaa atcgggtctta tctctca	27
15	<210> 1046 <211> 24 <212> DNA <213> synthetic construct	
	<400> 1046 ttgaattacc aaaattacca tacg	24
20	<210> 1047 <211> 26 <212> DNA <213> synthetic construct	
25	<400> 1047 ctcccagaat aatgaatggt ttaaatt	26
30	<210> 1048 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1048 gcgcattttg aaaaggca	18
35	<210> 1049 <211> 22 <212> DNA <213> synthetic construct	
40	<400> 1049 gggatagcac gtaaaagtgg aa	22
45	<210> 1050 <211> 22 <212> DNA <213> synthetic construct	
50	<400> 1050 ttcgttggtc ataggtgcga gt	22
55	<210> 1051 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1051	

EP 1 770 171 A1

	ctttgaacag cactcgtgcg	20
5	<210> 1052 <211> 28 <212> DNA <213> synthetic construct	
10	<400> 1052 tattgcctta tttagatgta ttgctttt	28
15	<210> 1053 <211> 24 <212> DNA <213> synthetic construct	
	<400> 1053 tcgtagcttc aaacacattt tcaa	24
20	<210> 1054 <211> 28 <212> DNA <213> synthetic construct	
25	<400> 1054 aatcaaataga tattggaaga tattagca	28
30	<210> 1055 <211> 28 <212> DNA <213> synthetic construct	
	<400> 1055 tattcagtat cttgtgctat tgtcattg	28
35	<210> 1056 <211> 25 <212> DNA <213> synthetic construct	
40	<400> 1056 catgcggtaa caattctgat aaaga	25
45	<210> 1057 <211> 22 <212> DNA <213> synthetic construct	
50	<400> 1057 aattttcgct ttaggtgcag ct	22
55	<210> 1058 <211> 25 <212> DNA <213> synthetic construct	
	<400> 1058	

EP 1 770 171 A1

	gctgactatg aaggtaaagc tgaca	25
5	<210> 1059 <211> 24 <212> DNA <213> synthetic construct	
10	<400> 1059 cagctaagtt ttcttttggt tgga	24
15	<210> 1060 <211> 25 <212> DNA <213> synthetic construct	
	<400> 1060 caattggctt tcgattattg ttgta	25
20	<210> 1061 <211> 30 <212> DNA <213> synthetic construct	
25	<400> 1061 aaccaatgat ctagtgtaaa tgttaaacct	30
30	<210> 1062 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1062 cttagatgtc ccatgctgat	20
35	<210> 1063 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1063 gtcaaacgag tgctaattggt	20
45	<210> 1064 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 1064 ttcaataggc gtggtgtc	18
55	<210> 1065 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1065	

EP 1 770 171 A1

	ttatctgtcg gtttctctgg	20
5	<210> 1066 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1066 aggctcgtat gattgaaaaa	20
15	<210> 1067 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1067 ggttttgagc acgatatgta g	21
20	<210> 1068 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1068 ttggcacaac tgataagaca	20
30	<210> 1069 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1069 aaaaatcggtt caaagtgctc	20
35	<210> 1070 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1070 atcatcagcg acaatgagag	20
45	<210> 1071 <211> 26 <212> DNA <213> synthetic construct	
50	<400> 1071 tttttaacat ctggaactat atctaa	26
55	<210> 1072 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1072	

EP 1 770 171 A1

	gtgccaattg caggatatg	19
5	<210> 1073 <211> 24 <212> DNA <213> synthetic construct	
10	<400> 1073 taatgttggt catttaagcg tttt	24
15	<210> 1074 <211> 22 <212> DNA <213> synthetic construct	
	<400> 1074 ttgataacat tgctgtgata gg	22
20	<210> 1075 <211> 22 <212> DNA <213> synthetic construct	
25	<400> 1075 ttcaattagt gattogagtg tt	22
30	<210> 1076 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1076 tcttccattc tctcagtcaa a	21
35	<210> 1077 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1077 agaccatgta ttaggtggc	20
45	<210> 1078 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 1078 agggcaaattg ctttcagt	18
55	<210> 1079 <211> 23 <212> DNA <213> synthetic construct	
	<400> 1079	

EP 1 770 171 A1

	aaaaggattg tttctctttt tct	23
5	<210> 1080 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 1080 gtgccagagt tgagattcc	19
15	<210> 1081 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1081 atttgtcggc cgagtttg	18
20	<210> 1082 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 1082 tgcattctcc attttaatatg c	21
30	<210> 1083 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1083 gtcattgtcc ttgttggtt	20
35	<210> 1084 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1084 ttgacagctt tgcattttta	20
45	<210> 1085 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1085 ggctttgttg cttttaatatga	20
55	<210> 1086 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1086	

EP 1 770 171 A1

	gtattattgc ttggggtgat	20
5	<210> 1087 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1087 ggatatttct ttcgtgctgt	20
15	<210> 1088 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1088 tggctatcag taatgtttcg	20
20	<210> 1089 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 1089 gaatcagcgt tgtcttcg	18
30	<210> 1090 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1090 atggtcaagc tgctgaagt	19
35	<210> 1091 <211> 27 <212> DNA <213> synthetic construct	
40	<400> 1091 atcatcttct ttaagtgtaa taagttt	27
45	<210> 1092 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1092 tggaagacat cgtaaacgta	20
55	<210> 1093 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1093	

EP 1 770 171 A1

	tggatcaaag aaacgtgaat	20
5	<210> 1094 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 1094 ggacgttgta ctcccaca	18
15	<210> 1095 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1095 ctttcaacac cccaagttc	19
20	<210> 1096 <211> 24 <212> DNA <213> synthetic construct	
25	<400> 1096 tgaatagaaa tactaggacc acaa	24
30	<210> 1097 <211> 24 <212> DNA <213> synthetic construct	
	<400> 1097 ttaagtttaa tccatctgaa aaat	24
35	<210> 1098 <211> 25 <212> DNA <213> synthetic construct	
40	<400> 1098 ggtgtattag ataatgaagg tatgg	25
45	<210> 1099 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1099 tccttatattt tggcagggttg	20
55	<210> 1100 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1100	

EP 1 770 171 A1

	aacccaaaagg cgagagtt	18
5	<210> 1101 <211> 23 <212> DNA <213> synthetic construct	
10	<400> 1101 gctgtcaaca taataaatgc ttc	23
15	<210> 1102 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1102 gcgaaagagt cgaaatcag	19
20	<210> 1103 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1103 aaggtgaacg ctctaattca	20
30	<210> 1104 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1104 ccggttacggtt gttcttcagt	20
35	<210> 1105 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1105 gcaatgggtt cattcaaagt	20
45	<210> 1106 <211> 25 <212> DNA <213> synthetic construct	
50	<400> 1106 tgatattgga agatattagc ataga	25
55	<210> 1107 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1107	

EP 1 770 171 A1

	tgacaatcgc tttattcatt t	21
5	<210> 1108 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 1108 ttttgattta tcttctgacg g	21
15	<210> 1109 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1109 cattcatttt attcccacct	20
20	<210> 1110 <211> 24 <212> DNA <213> synthetic construct	
25	<400> 1110 tggatataac aatcaaaatc actc	24
30	<210> 1111 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1111 ttttagaaat gattcgacag c	21
35	<210> 1112 <211> 27 <212> DNA <213> synthetic construct	
40	<400> 1112 atgagatacc taacatcagg agaatca	27
45	<210> 1113 <211> 29 <212> DNA <213> synthetic construct	
50	<400> 1113 gctattcttc catctaattt acgatcata	29
55	<210> 1114 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1114	

EP 1 770 171 A1

	accttcaata ttcgcatcc	19
5	<210> 1115 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 1115 tattccgatt attaggcgta g	21
15	<210> 1116 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1116 tcgaggaatt aacaaaggtc	20
20	<210> 1117 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1117 atcaggttta gttgggtggtg	20
30	<210> 1118 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1118 gaacctagcc atcaagacag	20
35	<210> 1119 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1119 gcattattag aggcatgtgg	20
45	<210> 1120 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1120 tcgtgcatta gtaccatcag	20
55	<210> 1121 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1121	

EP 1 770 171 A1

	aaccaccttc gtcacctac	19
5	<210> 1122 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 1122 cgccaaaata gtgcttca	18
15	<210> 1123 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1123 ggtttgctct catcacctaa	20
20	<210> 1124 <211> 25 <212> DNA <213> synthetic construct	
25	<400> 1124 tgaaaaataa attgatagca aaatc	25
30	<210> 1125 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1125 ttcgctcttg taagaccatt	20
35	<210> 1126 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1126 aatcctcata acgcagaaag	20
45	<210> 1127 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1127 tcagctaaat cgtctgaacc	20
50	<210> 1128 <211> 20 <212> DNA <213> synthetic construct	
55	<400> 1128	

EP 1 770 171 A1

	gctggtgtgg tacttatcct	20
5	<210> 1129 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 1129 acgcctgtct ttccattgt	19
15	<210> 1130 <211> 27 <212> DNA <213> synthetic construct	
	<400> 1130 ttaacaatag aacatttaac aaagaag	27
20	<210> 1131 <211> 23 <212> DNA <213> synthetic construct	
25	<400> 1131 ctcgaaatta agaaagtaac acc	23
30	<210> 1132 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1132 aaatggttca gtcgtaatgg	20
35	<210> 1133 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1133 agttgctctg gatgtcctac	20
45	<210> 1134 <211> 23 <212> DNA <213> synthetic construct	
50	<400> 1134 ggtattgcat ctgtaacttt agg	23
55	<210> 1135 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1135	

EP 1 770 171 A1

	aggttagcac ttgacttgg	20
5	<210> 1136 <211> 27 <212> DNA <213> synthetic construct	
10	<400> 1136 gttatcaatt aatacaaccc ctgaagc	27
15	<210> 1137 <211> 26 <212> DNA <213> synthetic construct	
	<400> 1137 tggaactaat tctccttcga ttgtta	26
20	<210> 1138 <211> 26 <212> DNA <213> synthetic construct	
25	<400> 1138 gtagttgaaa atatgocctgt tgggtgt	26
30	<210> 1139 <211> 26 <212> DNA <213> synthetic construct	
	<400> 1139 attacacccat taacgataat tggcat	26
35	<210> 1140 <211> 30 <212> DNA <213> synthetic construct	
40	<400> 1140 agacttatta tctaaacgtg gtgaactagc	30
45	<210> 1141 <211> 24 <212> DNA <213> synthetic construct	
50	<400> 1141 caaatgattt attgccgtct ccta	24
55	<210> 1142 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1142	

EP 1 770 171 A1

	aaaattgctg gtatcgctgc a	21
5	<210> 1143 <211> 27 <212> DNA <213> synthetic construct	
10	<400> 1143 gtcattacat catcaacttg catgtta	27
15	<210> 1144 <211> 23 <212> DNA <213> synthetic construct	
20	<400> 1144 agctgagacg acacaagatc aaa	23
25	<210> 1145 <211> 23 <212> DNA <213> synthetic construct	
30	<400> 1145 ttatattgcg tttcaagagc tgc	23
35	<210> 1146 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 1146 cgggattctc tgcattatc	19
45	<210> 1147 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 1147 gtccgctggt atttctttg	19
55	<210> 1148 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1148 ttaattgttc taccgctcca	20
	<210> 1149 <211> 23 <212> DNA <213> synthetic construct	
	<400> 1149	

EP 1 770 171 A1

	catttgtacc cattattgta acc	23
5	<210> 1150 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 1150 aaagataatt ggtttgctga a	21
15	<210> 1151 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1151 tcaaatacgt tcttaatacac t	21
20	<210> 1152 <211> 25 <212> DNA <213> synthetic construct	
25	<400> 1152 caagggtact taaacaaata gaaac	25
30	<210> 1153 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1153 ctccaattat gaatgaagga g	21
35	<210> 1154 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1154 actttgtgca attatcagca	20
45	<210> 1155 <211> 25 <212> DNA <213> synthetic construct	
50	<400> 1155 atgaaacaga aaatatgaaa aatac	25
55	<210> 1156 <211> 24 <212> DNA <213> synthetic construct	
	<400> 1156	

EP 1 770 171 A1

	ttatggatag cgtaaagaca ataa	24
5	<210> 1157 <211> 23 <212> DNA <213> synthetic construct	
10	<400> 1157 ttcaactggta ataaaacaaa caa	23
15	<210> 1158 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1158 gattcttggc gctactaaca	20
20	<210> 1159 <211> 22 <212> DNA <213> synthetic construct	
25	<400> 1159 ccacggtta cattactttc tc	22
30	<210> 1160 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1160 taatgtttcc ttgccttatg t	21
35	<210> 1161 <211> 22 <212> DNA <213> synthetic construct	
40	<400> 1161 tgataacttc ttctttcacc aa	22
45	<210> 1162 <211> 24 <212> DNA <213> synthetic construct	
50	<400> 1162 gtaaaaacat ttatgaaatc gaaa	24
55	<210> 1163 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1163	

EP 1 770 171 A1

	tgtatgttcc cccaattcta	20
5	<210> 1164 <211> 22 <212> DNA <213> synthetic construct	
10	<400> 1164 aagatacgat ttgttgattg tg	22
15	<210> 1165 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1165 ggccatacca taaataccc	19
20	<210> 1166 <211> 30 <212> DNA <213> synthetic construct	
25	<400> 1166 ttttatctta attaaggaag gagtgatttc	30
30	<210> 1167 <211> 27 <212> DNA <213> synthetic construct	
	<400> 1167 tagtgaattt gttcactgtg tcgataa	27
35	<210> 1168 <211> 21 <212> DNA <213> synthetic construct	
40	<400> 1168 aaacatcaaa tcgctgtggc t	21
45	<210> 1169 <211> 21 <212> DNA <213> synthetic construct	
50	<400> 1169 gtgaaagatg cccttgagtg g	21
55	<210> 1170 <211> 25 <212> DNA <213> synthetic construct	
	<400> 1170	

EP 1 770 171 A1

	gggttcttgc tgtctttaag tgatt	25
5	<210> 1171 <211> 25 <212> DNA <213> synthetic construct	
10	<400> 1171 tataatctcga agttgctagt tgggg	25
15	<210> 1172 <211> 25 <212> DNA <213> synthetic construct	
20	<400> 1172 aaagatagtt ctaagataaa tggtc	25
25	<210> 1173 <211> 19 <212> DNA <213> synthetic construct	
30	<400> 1173 ggccattatt ggtctgttg	19
35	<210> 1174 <211> 22 <212> DNA <213> synthetic construct	
40	<400> 1174 gctagtgcac ttgttattca ag	22
45	<210> 1175 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 1175 ttcacttctg tgcatttgg	19
55	<210> 1176 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1176 ttttagcagc gtcaattttt	20
	<210> 1177 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1177	

EP 1 770 171 A1

	ctgatccaga gtttcctacc t	21
5	<210> 1178 <211> 24 <212> DNA <213> synthetic construct	
10	<400> 1178 agaaagaaag tgatttctat gatt	24
15	<210> 1179 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1179 tggccatatac attcttttaa t	21
20	<210> 1180 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 1180 tcgttacacc gaatggtc	18
30	<210> 1181 <211> 24 <212> DNA <213> synthetic construct	
	<400> 1181 aggtgtgatg cttttaattt ttac	24
35	<210> 1182 <211> 23 <212> DNA <213> synthetic construct	
40	<400> 1182 tttaagcgta ctatcacaca gac	23
45	<210> 1183 <211> 25 <212> DNA <213> synthetic construct	
50	<400> 1183 tattgttttc agtttctttt gtatc	25
55	<210> 1184 <211> 22 <212> DNA <213> synthetic construct	
	<400> 1184	

EP 1 770 171 A1

	ttgatagcga tttatttgta gg	22
5	<210> 1185 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 1185 caattctgtc ctttcacttt g	21
15	<210> 1186 <211> 22 <212> DNA <213> synthetic construct	
	<400> 1186 gtcagctcag taacaacaac ac	22
20	<210> 1187 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1187 gtagcgaagt ctggtgaaaa	20
30	<210> 1188 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1188 tggtatcgac cgttttgtat c	21
35	<210> 1189 <211> 21 <212> DNA <213> synthetic construct	
40	<400> 1189 tttcatcttt ggggatattt t	21
45	<210> 1190 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1190 ggtgtcctat ctgaaaaca	20
55	<210> 1191 <211> 25 <212> DNA <213> synthetic construct	
	<400> 1191	

EP 1 770 171 A1

	tttttcotta gattgagtat ctatt	25
5	<210> 1192 <211> 24 <212> DNA <213> synthetic construct	
10	<400> 1192 ataaagaaag gaaatgattt tatg	24
15	<210> 1193 <211> 24 <212> DNA <213> synthetic construct	
	<400> 1193 tatctttaac aaaatcaaac tgaa	24
20	<210> 1194 <211> 22 <212> DNA <213> synthetic construct	
25	<400> 1194 atcattaggt aaaatgtctg ga	22
30	<210> 1195 <211> 25 <212> DNA <213> synthetic construct	
	<400> 1195 aattatgtcc tttcacttta atttc	25
35	<210> 1196 <211> 21 <212> DNA <213> synthetic construct	
40	<400> 1196 aagttgctca aatacaagct g	21
45	<210> 1197 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1197 tgatgtagc ccaatctaca	20
55	<210> 1198 <211> 25 <212> DNA <213> synthetic construct	
	<400> 1198	

EP 1 770 171 A1

	tggtattatt ctcattttct tcaat	25
5	<210> 1199 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1199 atgctctgat aaatctggga	20
15	<210> 1200 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1200 ttttattcat tggcctaacg	20
20	<210> 1201 <211> 26 <212> DNA <213> synthetic construct	
25	<400> 1201 ttttcagagt taatcgtttt attatc	26
30	<210> 1202 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1202 cgtagatgtg tttggagcta	20
35	<210> 1203 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1203 cttgagcagt cacctttttc	20
45	<210> 1204 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1204 aatttttggc acatgattta	20
55	<210> 1205 <211> 24 <212> DNA <213> synthetic construct	
	<400> 1205	

EP 1 770 171 A1

	cttttatgtc tagttottga gctg	24
5	<210> 1206 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 1206 ccacctgttg aaggaagag	19
15	<210> 1207 <211> 23 <212> DNA <213> synthetic construct	
20	<400> 1207 tttaggaaat aagtcaaacc aaa	23
25	<210> 1208 <211> 24 <212> DNA <213> synthetic construct	
30	<400> 1208 gaagatttac acgataaaag tgag	24
35	<210> 1209 <211> 24 <212> DNA <213> synthetic construct	
40	<400> 1209 aaatcataaa tgtcgaatga gtaa	24
45	<210> 1210 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1210 agtcttatct aacggcgatg	20
55	<210> 1211 <211> 22 <212> DNA <213> synthetic construct	
	<400> 1211 agttgtaact gtttgatgct tg	22
	<210> 1212 <211> 27 <212> DNA <213> synthetic construct	
	<400> 1212	

EP 1 770 171 A1

	ggatataaat acggaaataa agttaca	27
5	<210> 1213 <211> 23 <212> DNA <213> synthetic construct	
10	<400> 1213 gaagtcacag aagtagtgtg ttg	23
15	<210> 1214 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1214 atgaaattta aagcgatagc a	21
20	<210> 1215 <211> 27 <212> DNA <213> synthetic construct	
25	<400> 1215 gtataaacta ctttgtggtt cttcttt	27
30	<210> 1216 <211> 25 <212> DNA <213> synthetic construct	
	<400> 1216 gtattgaata taaaaatgtg acagg	25
35	<210> 1217 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1217 gacattgata acatcggaca	20
45	<210> 1218 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1218 gcgcaattac agtaacgac	19
50	<210> 1219 <211> 19 <212> DNA <213> synthetic construct	
55	<400> 1219	

EP 1 770 171 A1

	tagattgcat tggttgtgg	19
5	<210> 1220 <211> 26 <212> DNA <213> synthetic construct	
10	<400> 1220 tttaaaagtt agttctttat tcgttg	26
15	<210> 1221 <211> 25 <212> DNA <213> synthetic construct	
	<400> 1221 acttgaatat aagttacggg tgcatt	25
20	<210> 1222 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1222 tttttatcgt aagccctttg	20
30	<210> 1223 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1223 caataaccac ccgttttatt	20
35	<210> 1224 <211> 25 <212> DNA <213> synthetic construct	
40	<400> 1224 gaaagtattc tgtaggtact gcttc	25
45	<210> 1225 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1225 cctttatcaa tcgcaatgtc	20
55	<210> 1226 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1226	

EP 1 770 171 A1

	cgggcaaata aataaagatg	20
5	<210> 1227 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1227 aactgaagat aagccgtttg	20
15	<210> 1228 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1228 aaagttggcg atggtaaag	19
20	<210> 1229 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 1229 cgatgaagtt tgaatatcct g	21
30	<210> 1230 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1230 gtttgggact tattgctctg	20
35	<210> 1231 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 1231 catcagccac agtttcaag	19
45	<210> 1232 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 1232 agcctggtga cgacttata	19
55	<210> 1233 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1233	

EP 1 770 171 A1

	atccgccagt tgcttaac	18
5	<210> 1234 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 1234 accacgacag gtctttatg	19
15	<210> 1235 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1235 agagaggcac cgtcactac	19
20	<210> 1236 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 1236 atggaattgc gtctgttc	18
30	<210> 1237 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1237 aagtttagcc acagcagg	18
35	<210> 1238 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1238 ataatcctcg tcatttgcag	20
45	<210> 1239 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1239 gacttcgggt gattgataag	20
55	<210> 1240 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1240	

EP 1 770 171 A1

	ctctgtccct cagttctacg	20
5	<210> 1241 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1241 tggattggg tccgttatcc	20
15	<210> 1242 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1242 gactcggtag agcgattg	18
20	<210> 1243 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 1243 ctgacgttgg gtatctcg	18
30	<210> 1244 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1244 ctttacgacg gttctccc	18
35	<210> 1245 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 1245 aatcttccct gctgaaatg	19
45	<210> 1246 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 1246 ttgaaacttc ttactgccg	19
55	<210> 1247 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1247	

EP 1 770 171 A1

	aattttctaatt gcagcgtatt g	21
5	<210> 1248 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1248 atagcagggc tgtttgtatc	20
15	<210> 1249 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1249 gacacggaaa ccaaattaac	20
20	<210> 1250 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 1250 tattgtcatc gcgcagag	18
30	<210> 1251 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1251 tgttgggttg aaagagtagc	20
35	<210> 1252 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1252 gaataccaaa gcagatcgtc	20
45	<210> 1253 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 1253 ccgagatcga caacagag	18
55	<210> 1254 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1254	

EP 1 770 171 A1

	ctaactcatt gtggtggagc	20
5	<210> 1255 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 1255 cttgtcatcg gtcattgtg	19
15	<210> 1256 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1256 ggcgttacta tcctctctat g	21
20	<210> 1257 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 1257 tttccatact gattgccg	18
30	<210> 1258 <211> 24 <212> DNA <213> synthetic construct	
	<400> 1258 tttgttggtta ttggtacttc attc	24
35	<210> 1259 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 1259 atcgaaattg ttactggcg	19
45	<210> 1260 <211> 21 <212> DNA <213> synthetic construct	
50	<400> 1260 ttacgcttcc gatcatagta g	21
55	<210> 1261 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1261	

EP 1 770 171 A1

	gaatacggtt agttgaggcg	20
5	<210> 1262 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1262 aagtgaagag gtaatggctg	20
15	<210> 1263 <211> 19 <212> DNA <213> synthetic construct	
20	<400> 1263 taccatcagt atccttggc	19
25	<210> 1264 <211> 20 <212> DNA <213> synthetic construct	
30	<400> 1264 gatggtgact ctattgcagg	20
35	<210> 1265 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 1265 ccatacgatt ctggacctc	19
45	<210> 1266 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1266 tgtttgaggt cactttctgg	20
55	<210> 1267 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1267 caatagcttt caccaggg	18
	<210> 1268 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1268	

EP 1 770 171 A1

	tgttttctgca ctcgaaatg	19
5	<210> 1269 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 1269 ggcaatagct ttcaccag	18
15	<210> 1270 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1270 tatgctgctc caactattcc	20
20	<210> 1271 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1271 attatctcca tctttcaggg	20
30	<210> 1272 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1272 cttggaaatg ttggtaaagc	20
35	<210> 1273 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 1273 taaactcctt cggttgagc	19
45	<210> 1274 <211> 21 <212> DNA <213> synthetic construct	
50	<400> 1274 tcaatgctga aactataagg c	21
55	<210> 1275 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1275	

EP 1 770 171 A1

	acttagcacc cagttcgac	19
5	<210> 1276 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1276 catcaggcag ttatcctgtc	20
15	<210> 1277 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1277 agtcgtcctc ctgcattac	19
20	<210> 1278 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 1278 ttcacagcgg atatggac	18
30	<210> 1279 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1279 cactttgctc ccagaaatac	20
35	<210> 1280 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 1280 agactgggat ttggtcaac	19
45	<210> 1281 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 1281 agacaccatc ctgccttc	18
55	<210> 1282 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1282	

EP 1 770 171 A1

	ggagtatatatt gcgtgggtag	20
5	<210> 1283 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 1283 aagattcacc atagaggcg	19
15	<210> 1284 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1284 aaatgaatgt ctggactcaa c	21
20	<210> 1285 <211> 22 <212> DNA <213> synthetic construct	
25	<400> 1285 tgtaaacaac ggtcataaag tg	22
30	<210> 1286 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1286 agcagcatca ggttcttg	18
35	<210> 1287 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 1287 cagttgttca aacgcgag	18
45	<210> 1288 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1288 ttcttcggta tcctattccc	20
55	<210> 1289 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1289	

EP 1 770 171 A1

	tgtgaggtcc acttcttcc	19
5	<210> 1290 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1290 aaatggcgac aaattatacc	20
15	<210> 1291 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1291 ctgggtctcc tcattacaag	20
20	<210> 1292 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 1292 aagaagatgt ttatggcgg	19
30	<210> 1293 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1293 gattcacagg tactggattt g	21
35	<210> 1294 <211> 25 <212> DNA <213> synthetic construct	
40	<400> 1294 ccactttttc tacttctaaa acttc	25
45	<210> 1295 <211> 22 <212> DNA <213> synthetic construct	
50	<400> 1295 tattttcaaa gatgcaaaca ca	22
55	<210> 1296 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1296	

EP 1 770 171 A1

	ttgataacaa acaaattctg c	21
5	<210> 1297 <211> 24 <212> DNA <213> synthetic construct	
10	<400> 1297 aacgtttaaa tcttatctta actg	24
15	<210> 1298 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1298 taacactgaa cccaatga	19
20	<210> 1299 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1299 atccggtttt tatggtatga	20
30	<210> 1300 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1300 cctcaaacaa gcagaaaaag	20
35	<210> 1301 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 1301 actaaatggg gtgaattgc	19
45	<210> 1302 <211> 21 <212> DNA <213> synthetic construct	
50	<400> 1302 cttagggaag aagatgggta g	21
55	<210> 1303 <211> 27 <212> DNA <213> synthetic construct	
	<400> 1303	

EP 1 770 171 A1

	cgtaaaaata acttagatca catacag	27
5	<210> 1304 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 1304 cctcgcataat cagtttgtg	19
15	<210> 1305 <211> 25 <212> DNA <213> synthetic construct	
	<400> 1305 gatgatatta atctatttcc gtttg	25
20	<210> 1306 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1306 atgaagcaca accaccatac	20
30	<210> 1307 <211> 26 <212> DNA <213> synthetic construct	
	<400> 1307 gtattattta cggctctattt agcaag	26
35	<210> 1308 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1308 ctaagcacao gaaaggctca	20
45	<210> 1309 <211> 27 <212> DNA <213> synthetic construct	
50	<400> 1309 tcacatceta tgaatttact actatcc	27
55	<210> 1310 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1310	

EP 1 770 171 A1

	acgacgaatg attcataagg	20
5	<210> 1311 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 1311 ttctatcaat gctggattca c	21
15	<210> 1312 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1312 ttaaaccatt aggaaatcgt g	21
20	<210> 1313 <211> 25 <212> DNA <213> synthetic construct	
25	<400> 1313 aatagctaata atatcttctt ctttt	25
30	<210> 1314 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1314 tcaagacacg ctttctagtg	20
35	<210> 1315 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 1315 atcgaaccct ttgtttcc	18
45	<210> 1316 <211> 23 <212> DNA <213> synthetic construct	
50	<400> 1316 gttttcttat tacgaaccac att	23
55	<210> 1317 <211> 22 <212> DNA <213> synthetic construct	
	<400> 1317	

EP 1 770 171 A1

	ctgaagtgtgta aacccatatt ga	22
5	<210> 1318 <211> 24 <212> DNA <213> synthetic construct	
10	<400> 1318 ttattctgct atatgatatt cacg	24
15	<210> 1319 <211> 23 <212> DNA <213> synthetic construct	
	<400> 1319 aacattagta gatggattca agg	23
20	<210> 1320 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 1320 acattaagtc agcatttgga g	21
30	<210> 1321 <211> 24 <212> DNA <213> synthetic construct	
	<400> 1321 taactttaag acgactatcc atca	24
35	<210> 1322 <211> 23 <212> DNA <213> synthetic construct	
40	<400> 1322 attagagcca aagtactctc cac	23
45	<210> 1323 <211> 22 <212> DNA <213> synthetic construct	
50	<400> 1323 taacaaacca acctttcgat ac	22
55	<210> 1324 <211> 24 <212> DNA <213> synthetic construct	
	<400> 1324	

EP 1 770 171 A1

	tttgatacct gtaatttggt cttg	24
5	<210> 1325 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 1325 caccaattga tccaatgtta t	21
15	<210> 1326 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1326 agcttctcgc actacttgac	20
20	<210> 1327 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1327 gaatgaggca gctatcaaac	20
30	<210> 1328 <211> 24 <212> DNA <213> synthetic construct	
	<400> 1328 aaagaaatta agtctctagc caaa	24
35	<210> 1329 <211> 22 <212> DNA <213> synthetic construct	
40	<400> 1329 ttattgtgcg taaggataat tg	22
45	<210> 1330 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1330 aaccaaacga tgctagatga	20
55	<210> 1331 <211> 24 <212> DNA <213> synthetic construct	
	<400> 1331	

EP 1 770 171 A1

	aagaataactt taccaaaagg tgag	24
5	<210> 1332 <211> 24 <212> DNA <213> synthetic construct	
10	<400> 1332 agttttataa tattcagtgc aaaa	24
15	<210> 1333 <211> 24 <212> DNA <213> synthetic construct	
	<400> 1333 tgaaagataa aatactaggt gtcg	24
20	<210> 1334 <211> 26 <212> DNA <213> synthetic construct	
25	<400> 1334 tttagagaga cagctagata atttga	26
30	<210> 1335 <211> 23 <212> DNA <213> synthetic construct	
	<400> 1335 caatcttact aattgcttga cct	23
35	<210> 1336 <211> 21 <212> DNA <213> synthetic construct	
40	<400> 1336 tgaaagaagg gatagttttg c	21
45	<210> 1337 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 1337 ttaaaccgatt gggatgatgg	19
55	<210> 1338 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1338	

EP 1 770 171 A1

	atgcaaatta tggagatgaa g	21
5	<210> 1339 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1339 gacagcttga cctttaccag	20
15	<210> 1340 <211> 25 <212> DNA <213> synthetic construct	
	<400> 1340 tgattataga agaaattcaa ggaaa	25
20	<210> 1341 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1341 tcaatcatgt gaatgtccta	20
30	<210> 1342 <211> 23 <212> DNA <213> synthetic construct	
	<400> 1342 ttaacttatt cagatgggat agc	23
35	<210> 1343 <211> 23 <212> DNA <213> synthetic construct	
40	<400> 1343 gaaataaaga ttcgaacatg aac	23
45	<210> 1344 <211> 22 <212> DNA <213> synthetic construct	
50	<400> 1344 tcgtatatgg aatttgtagc ag	22
55	<210> 1345 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1345	

EP 1 770 171 A1

	tgatgatgat aaatcgtttg	20
5	<210> 1346 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 1346 gcttaacaac gtaaaacaag c	21
15	<210> 1347 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1347 tctttctctt caacaatacg c	21
20	<210> 1348 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1348 agctcacggc tttaactatg	20
30	<210> 1349 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1349 tgtagaacgt ggaaatggtg	20
35	<210> 1350 <211> 21 <212> DNA <213> synthetic construct	
40	<400> 1350 gtatttacgt gcgtttattt g	21
45	<210> 1351 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1351 atgaattgat gaaaagtgtc	20
55	<210> 1352 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1352	

EP 1 770 171 A1

	ggccaagccc agacagag	18
5	<210> 1353 <211> 24 <212> DNA <213> synthetic construct	
10	<400> 1353 atgtcacgac ctttcttata tttt	24
15	<210> 1354 <211> 25 <212> DNA <213> synthetic construct	
	<400> 1354 catttaacag tgaatatact tggtc	25
20	<210> 1355 <211> 24 <212> DNA <213> synthetic construct	
25	<400> 1355 gaaatatatc gaaaaagtgt tgag	24
30	<210> 1356 <211> 23 <212> DNA <213> synthetic construct	
	<400> 1356 atgtcaaaat tagcagaagc tat	23
35	<210> 1357 <211> 22 <212> DNA <213> synthetic construct	
40	<400> 1357 ttagaaaccg aagattttac ct	22
45	<210> 1358 <211> 21 <212> DNA <213> synthetic construct	
50	<400> 1358 tgacacaata cctcatgaac c	21
55	<210> 1359 <211> 23 <212> DNA <213> synthetic construct	
	<400> 1359	

EP 1 770 171 A1

	tcctttotta taaccactac agg	23
5	<210> 1360 <211> 27 <212> DNA <213> synthetic construct	
10	<400> 1360 gtgacagatg taagacttag aaaaata	27
15	<210> 1361 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1361 agcttcgtct gattcttcg	19
20	<210> 1362 <211> 25 <212> DNA <213> synthetic construct	
25	<400> 1362 atgaaaataa tcaactcaga taagg	25
30	<210> 1363 <211> 26 <212> DNA <213> synthetic construct	
	<400> 1363 tataattcct tcaactttacc tatcaa	26
35	<210> 1364 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 1364 atgaacatga gcgacatca	19
45	<210> 1365 <211> 22 <212> DNA <213> synthetic construct	
50	<400> 1365 atacgtttctg caagatgttc ta	22
55	<210> 1366 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1366	

EP 1 770 171 A1

	ttgaattggg aacgacag	18
5	<210> 1367 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1367 actactatattt gggcgaacac	20
15	<210> 1368 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1368 aatgacgatg aaacttcctt t	21
20	<210> 1369 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 1369 acccatacgc ttgaaatct	19
30	<210> 1370 <211> 24 <212> DNA <213> synthetic construct	
	<400> 1370 catcaattgt gtgataatga taag	24
35	<210> 1371 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1371 gctgtttgca attctttagc	20
45	<210> 1372 <211> 27 <212> DNA <213> synthetic construct	
50	<400> 1372 acgtatatcg tcttgaatat tttotaa	27
55	<210> 1373 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1373	

EP 1 770 171 A1

	ctacgctagt cgaaggctat	20
5	<210> 1374 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1374 aatcgtccac ttgtcttttg	20
15	<210> 1375 <211> 23 <212> DNA <213> synthetic construct	
	<400> 1375 aatttcacta ggcgtataat cag	23
20	<210> 1376 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 1376 ccaagatgct aatgtgtctt c	21
30	<210> 1377 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1377 tttagacctgg agttaaatgg	20
35	<210> 1378 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1378 tgccaattaa acagttaggc	20
45	<210> 1379 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 1379 ttttagttgc cgatgggtg	18
55	<210> 1380 <211> 25 <212> DNA <213> synthetic construct	
	<400> 1380	

EP 1 770 171 A1

	tttaaatggtg ttatttggtg ctaaa	25
5	<210> 1381 <211> 24 <212> DNA <213> synthetic construct	
10	<400> 1381 aaatagagca tgatcaaaga taaa	24
15	<210> 1382 <211> 23 <212> DNA <213> synthetic construct	
	<400> 1382 tatcaatctt tcaagcagtt atg	23
20	<210> 1383 <211> 25 <212> DNA <213> synthetic construct	
25	<400> 1383 aaataaaata tagcgatggt aaatg	25
30	<210> 1384 <211> 22 <212> DNA <213> synthetic construct	
	<400> 1384 caaaggagtg tgattttatg tc	22
35	<210> 1385 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1385 tggattagct ttaggaccag	20
45	<210> 1386 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1386 gaagtggagc gtaatttgtc	20
55	<210> 1387 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1387	

EP 1 770 171 A1

	ctgcttgaac atcatctgg	19
5	<210> 1388 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 1388 tgtcaggtat cgtagatgca a	21
15	<210> 1389 <211> 26 <212> DNA <213> synthetic construct	
	<400> 1389 ggaataatcc aataataaag tctaca	26
20	<210> 1390 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 1390 gaaataaccg cattccaac	19
30	<210> 1391 <211> 25 <212> DNA <213> synthetic construct	
	<400> 1391 gatttgtata tttagtgttt cagca	25
35	<210> 1392 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 1392 aagagaacca aaccaatcg	19
45	<210> 1393 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1393 ttctttcggc ttaaagtcac	20
55	<210> 1394 <211> 25 <212> DNA <213> synthetic construct	
	<400> 1394	

EP 1 770 171 A1

	aaaagatatg acataatggtt acgaa	25
5	<210> 1395 <211> 23 <212> DNA <213> synthetic construct	
10	<400> 1395 atagtatatg tagctggcgg ttg	23
15	<210> 1396 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1396 catccaattt acagaaccat c	21
20	<210> 1397 <211> 22 <212> DNA <213> synthetic construct	
25	<400> 1397 cgtcatcaga agtagaagtg ag	22
30	<210> 1398 <211> 26 <212> DNA <213> synthetic construct	
	<400> 1398 tgtatcaact ccactttatt catatt	26
35	<210> 1399 <211> 22 <212> DNA <213> synthetic construct	
40	<400> 1399 tttttcgtat cttatgggtc tt	22
45	<210> 1400 <211> 21 <212> DNA <213> synthetic construct	
50	<400> 1400 agcaagttct ttgttaattg c	21
55	<210> 1401 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1401	

EP 1 770 171 A1

	ttcgtttgat tgaacttgaa c	21
5	<210> 1402 <211> 25 <212> DNA <213> synthetic construct	
10	<400> 1402 tattgtcaaa gtcacaacaa ttaga	25
15	<210> 1403 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1403 acgttgatc gcattgtaaa	20
20	<210> 1404 <211> 25 <212> DNA <213> synthetic construct	
25	<400> 1404 tcagatataa acaatttaac aagga	25
30	<210> 1405 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1405 gaaggtgcct gatctgtaat	20
35	<210> 1406 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1406 taatcaaacg caacaacaac	20
45	<210> 1407 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 1407 catcgccatt atctgtagg	19
55	<210> 1408 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1408	

EP 1 770 171 A1

	aaacgcattg ttaagagacc	20
5	<210> 1409 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1409 acctctagca ccaatcaaag	20
15	<210> 1410 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1410 caggtaaagtc aaagtctggt g	21
20	<210> 1411 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1411 attgccacct tgtatattgg	20
30	<210> 1412 <211> 24 <212> DNA <213> synthetic construct	
	<400> 1412 gattaatgac atcaagggtt tagt	24
35	<210> 1413 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 1413 gcaaagcttg cataacatc	19
45	<210> 1414 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1414 tctggtgaag gtttaggaag	20
55	<210> 1415 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1415	

EP 1 770 171 A1

	accacttgac tcgaacaaac	20
5	<210> 1416 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1416 caccaaaactc aggcttattc	20
15	<210> 1417 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1417 agaccatacc cttgaccac	19
20	<210> 1418 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 1418 gaatgcaaag aaacattgaa a	21
30	<210> 1419 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1419 ccgtatgcaa atcatcact	19
35	<210> 1420 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1420 tgtctgctgc tagtgaatcc	20
45	<210> 1421 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1421 aagcaatttg agcttttagca	20
55	<210> 1422 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1422	

EP 1 770 171 A1

	tgacagggttc attggtgtc	19
5	<210> 1423 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 1423 acagcctcaa attctccac	19
15	<210> 1424 <211> 20 <212> DNA <213> synthetic construct	
20	<400> 1424 tcagatgggtg atgaactgtc	20
25	<210> 1425 <211> 20 <212> DNA <213> synthetic construct	
30	<400> 1425 gacttcttgt tgtggaggag	20
35	<210> 1426 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1426 aactagggct gctaattgtg	20
45	<210> 1427 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 1427 ttgagcaaga gatcctgaa	19
55	<210> 1428 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1428 agtcagagca gggatcaatc	19
	<210> 1429 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1429	

EP 1 770 171 A1

	atgtcgggta agacacaatc	20
5	<210> 1430 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 1430 gtcaacaaca aggcaagac	19
15	<210> 1431 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1431 ctagccacga ctctttgaac	20
20	<210> 1432 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1432 ctgtcaagaa actgacgttg	20
30	<210> 1433 <211> 22 <212> DNA <213> synthetic construct	
	<400> 1433 ttgttgtaga attggatgaa tg	22
35	<210> 1434 <211> 21 <212> DNA <213> synthetic construct	
40	<400> 1434 ttggctcgat taagaaataa a	21
45	<210> 1435 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 1435 ctgaaacatc accagcaga	19
55	<210> 1436 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1436	

EP 1 770 171 A1

	gctccatcta gcaactcatc	20
5	<210> 1437 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1437 gagaccaaca aacacgaaac	20
15	<210> 1438 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1438 gacactccgt cagattcaac	20
20	<210> 1439 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1439 attcccgtca tcaacattag	20
30	<210> 1440 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1440 acatagtcag ccacaaccac	20
35	<210> 1441 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1441 gcactcgaat tggtatttcc	20
45	<210> 1442 <211> 21 <212> DNA <213> synthetic construct	
50	<400> 1442 tcaagaaagc tactgatggt g	21
55	<210> 1443 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1443	

EP 1 770 171 A1

	atttactggt gtccaagacg	20
5	<210> 1444 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1444 ctccagtcctt tgctacaacc	20
15	<210> 1445 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1445 aacggtatca gtttcaccag	20
20	<210> 1446 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1446 aacggtcata tccaaagaag	20
30	<210> 1447 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1447 acccatgaaa caaggtgtag	20
35	<210> 1448 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1448 aacattagaa acggaacagg	20
45	<210> 1449 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1449 ctccagttctg catttggttc	20
55	<210> 1450 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1450	

EP 1 770 171 A1

	caaagttcca ccatttcaac	20
5	<210> 1451 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1451 attgataccta atgcttccac	20
15	<210> 1452 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1452 atcgacatca acaggcttac	20
20	<210> 1453 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1453 tctttggagg atatggacac	20
30	<210> 1454 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1454 caatagcaca ggcacaatc	19
35	<210> 1455 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1455 aaatctcatc cctcttcacc	20
45	<210> 1456 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1456 ttcattcaaa ccagccttac	20
55	<210> 1457 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1457	

EP 1 770 171 A1

	ttcaccatac catcttacac c	21
5	<210> 1458 <211> 24 <212> DNA <213> synthetic construct	
10	<400> 1458 cacaagggtta tacattcaga aaac	24
15	<210> 1459 <211> 22 <212> DNA <213> synthetic construct	
	<400> 1459 ctacatacca tttcaacacc ac	22
20	<210> 1460 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 1460 aaaccataaa tcaacaacca c	21
30	<210> 1461 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1461 caccaacaca tctcattgtc	20
35	<210> 1462 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 1462 tattatggcg attccacag	19
45	<210> 1463 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 1463 cagcccaaatt tcttggtc	18
55	<210> 1464 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1464	

EP 1 770 171 A1

	cgtttggttat ttgctgttcc	20
5	<210> 1465 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1465 gctgctttca tagtttcacc	20
15	<210> 1466 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1466 agctaaatcc aaagacgatg	20
20	<210> 1467 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1467 ccttgattat gcgagaaatg	20
30	<210> 1468 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1468 gctaccactc caaacacttc	20
35	<210> 1469 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1469 agacgacagc actagattcc	20
45	<210> 1470 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1470 ttggtggggtt agaagttgag	20
55	<210> 1471 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1471	

EP 1 770 171 A1

	ttgaaacagc atgaacaatc	20
5	<210> 1472 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 1472 caagagaaaag ggaaagaaga g	21
15	<210> 1473 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1473 aggtttcgtc gtatgaagtg	20
20	<210> 1474 <211> 27 <212> DNA <213> synthetic construct	
25	<400> 1474 cgttaactca gtcataact acatttt	27
30	<210> 1475 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1475 gcaataaaaag aaacccaat	20
35	<210> 1476 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1476 gatccagatg ctgtaaccac	20
45	<210> 1477 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1477 catcgtaaata aaccggtttc	20
55	<210> 1478 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1478	

EP 1 770 171 A1

	taattttccct tgttggttcc	20
5	<210> 1479 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1479 tcaatccaac catcttcttc	20
15	<210> 1480 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1480 acattcattg gggtcatctc	20
20	<210> 1481 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1481 attggtggta attgtgttcc	20
30	<210> 1482 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1482 tgtcccagaa agtgctaaac	20
35	<210> 1483 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 1483 aataccaccg gaaactgg	18
45	<210> 1484 <211> 22 <212> DNA <213> synthetic construct	
50	<400> 1484 ttagctcatc aacatcatca ac	22
55	<210> 1485 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1485	

EP 1 770 171 A1

	gctttaattt gacttggagt g	21
5	<210> 1486 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1486 actgtcgttt ctggtcattc	20
15	<210> 1487 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1487 acgagtgaata tctcttggtg	20
20	<210> 1488 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1488 ggtacgaaca gacaaacacc	20
30	<210> 1489 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1489 aacagctcta atggcaaata	20
35	<210> 1490 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1490 ttagccaagt ttgaatcgta	20
45	<210> 1491 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1491 aattttcttg tcatcattgg	20
55	<210> 1492 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1492	

EP 1 770 171 A1

	tcaatcttgg ctgctacttc	20
5	<210> 1493 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1493 ggctaataa actctgatgg	20
15	<210> 1494 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1494 attgggtatc aacaccattc	20
20	<210> 1495 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1495 ccatagttgt ttggttcctg	20
30	<210> 1496 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1496 attagctgaa catgccagag	20
35	<210> 1497 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 1497 atctccattg cacccttc	18
45	<210> 1498 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 1498 gatttacacg cctcacaaa	19
55	<210> 1499 <211> 22 <212> DNA <213> synthetic construct	
	<400> 1499	

EP 1 770 171 A1

	gcaataacag cagaaatatc aa	22
5	<210> 1500 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1500 taccacgata gctccatttc	20
15	<210> 1501 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1501 acccaaagtt ctcttgctg	19
20	<210> 1502 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1502 gtggtgttac tgttggtgaa	20
30	<210> 1503 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1503 gtagcatccc aagtcaaatc	20
35	<210> 1504 <211> 25 <212> DNA <213> synthetic construct	
40	<400> 1504 aagagatgat cctcatacta ttgaa	25
45	<210> 1505 <211> 22 <212> DNA <213> synthetic construct	
50	<400> 1505 caagacaaca cattttcttct tc	22
55	<210> 1506 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1506	

EP 1 770 171 A1

	taagagagat ggccgtaaag	20
5	<210> 1507 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 1507 ttaccgtgaa taccgacag	19
15	<210> 1508 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1508 ttttggacct caaatggac	19
20	<210> 1509 <211> 24 <212> DNA <213> synthetic construct	
25	<400> 1509 aaatagtctt cttttatgct tcct	24
30	<210> 1510 <211> 23 <212> DNA <213> synthetic construct	
	<400> 1510 ccaagaactt accattattg aac	23
35	<210> 1511 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1511 tttcgtttct agccaatctc	20
45	<210> 1512 <211> 22 <212> DNA <213> synthetic construct	
50	<400> 1512 ttaaaggatt caaaaagggt gt	22
55	<210> 1513 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1513	

EP 1 770 171 A1

	aataattctt gtgctggttc a	21
5	<210> 1514 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 1514 catggcacca gaaagaac	18
15	<210> 1515 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1515 aattgttggt ttgcagtagg	20
20	<210> 1516 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1516 tataatgccc cgaaaataaa	20
30	<210> 1517 <211> 22 <212> DNA <213> synthetic construct	
	<400> 1517 ttaagcggat atctatcgta cc	22
35	<210> 1518 <211> 21 <212> DNA <213> synthetic construct	
40	<400> 1518 tggaacctgt ttgtacttga c	21
45	<210> 1519 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 1519 ctagcccaact ttccaattc	19
55	<210> 1520 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1520	

EP 1 770 171 A1

	gatttcctag ccggaatg	18
5	<210> 1521 <211> 26 <212> DNA <213> synthetic construct	
10	<400> 1521 attatgtaac cttagtcgta attgtc	26
15	<210> 1522 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1522 aagacgactg agcgtgtc	18
20	<210> 1523 <211> 22 <212> DNA <213> synthetic construct	
25	<400> 1523 tggactggaa gataagctag ag	22
30	<210> 1524 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1524 acatgtcaag aggattgttc a	21
35	<210> 1525 <211> 24 <212> DNA <213> synthetic construct	
40	<400> 1525 tttacattga ttgattaaat ttgc	24
45	<210> 1526 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1526 gccgaagata ctaaaccaaa	20
55	<210> 1527 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1527	

EP 1 770 171 A1

	tcagaaacat cagcagtaac a	21
5	<210> 1528 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1528 tctgatgttg ctgtttgttc	20
15	<210> 1529 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1529 atcttcagtt tcaccagtcc	20
20	<210> 1530 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1530 tcgaccatac catccaatac	20
30	<210> 1531 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1531 ttcacaaaga aacctagcaa c	21
35	<210> 1532 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1532 agaaatttgg cctgatgtta	20
45	<210> 1533 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1533 ggtgtttgtc aatcccaata	20
50	<210> 1534 <211> 20 <212> DNA <213> synthetic construct	
55	<400> 1534	

EP 1 770 171 A1

	aacagcaacc agaatcaag	20
5	<210> 1535 <211> 23 <212> DNA <213> synthetic construct	
10	<400> 1535 tttaatcaac aggaatcttc aac	23
15	<210> 1536 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1536 gctaccactt taaccgacac	20
20	<210> 1537 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1537 cttctccacc attagcactc	20
30	<210> 1538 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1538 tttcatcacc acctcaagtc	20
35	<210> 1539 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1539 atttcaacaa gccaatcaac	20
45	<210> 1540 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1540 ccagcaaaca attcctaatac	20
55	<210> 1541 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1541	

EP 1 770 171 A1

	ttcccattac cgctagaac	19
5	<210> 1542 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1542 gctcgtttga ttagatttgg	20
15	<210> 1543 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1543 tggtcacgga ctaaagcag	19
20	<210> 1544 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1544 cccaactaat tcagcatcac	20
30	<210> 1545 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1545 gtaccaattc ggctttactg	20
35	<210> 1546 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 1546 aacagcaagc tgctcagt	18
45	<210> 1547 <211> 22 <212> DNA <213> synthetic construct	
50	<400> 1547 ttacaaaaac caacttcttt tc	22
55	<210> 1548 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1548	

EP 1 770 171 A1

	gtcctttcaa gtgtttgtgg	20
5	<210> 1549 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1549 tattgttggt gtgggtgttg	20
15	<210> 1550 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1550 ataaccacaa taaggtctgg	20
20	<210> 1551 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1551 agctagttcg tggatctttg	20
30	<210> 1552 <211> 23 <212> DNA <213> synthetic construct	
	<400> 1552 tgactacgat gactactgaa gaa	23
35	<210> 1553 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1553 ttttagcaac aatgggtttt	20
45	<210> 1554 <211> 22 <212> DNA <213> synthetic construct	
50	<400> 1554 attggtttca aacagttact ca	22
55	<210> 1555 <211> 22 <212> DNA <213> synthetic construct	
	<400> 1555	

EP 1 770 171 A1

	attctctttca acatgcttct ct	22
5	<210> 1556 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1556 aaagagctaa ccacgtcaag	20
15	<210> 1557 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1557 gatcgacaaa gtcaaggaac	20
20	<210> 1558 <211> 23 <212> DNA <213> synthetic construct	
25	<400> 1558 aggtggtgtc atgaaattat tag	23
30	<210> 1559 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1559 acaggaattc gattggtag	20
35	<210> 1560 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 1560 ttgccaatc agcattac	18
45	<210> 1561 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1561 acaccttggc cttgtttcac	20
55	<210> 1562 <211> 24 <212> DNA <213> synthetic construct	
	<400> 1562	

EP 1 770 171 A1

	atatacgaagt ggtctattta gagg	24
5	<210> 1563 <211> 23 <212> DNA <213> synthetic construct	
10	<400> 1563 ttgattctga acgatcatag act	23
15	<210> 1564 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1564 aattaaacaa agcaggaatc a	21
20	<210> 1565 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 1565 ccaccacatg aaatggtaa	19
30	<210> 1566 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1566 agttgcacaa gtagcgatg	19
35	<210> 1567 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1567 tgagaagtca agcgagaaac	20
45	<210> 1568 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1568 cgcagacaag aaagacaac	19
50	<210> 1569 <211> 18 <212> DNA <213> synthetic construct	
55	<400> 1569	

EP 1 770 171 A1

	gtgtggtagc cgtttgag	18
5	<210> 1570 <211> 24 <212> DNA <213> synthetic construct	
10	<400> 1570 ttttcacttt taggagctat tttt	24
15	<210> 1571 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1571 ctttttcacgc tgccgtagtc	20
20	<210> 1572 <211> 23 <212> DNA <213> synthetic construct	
25	<400> 1572 caaaaccaac agaagaagaa tta	23
30	<210> 1573 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1573 cgaacttcta ctcggtgcat	20
35	<210> 1574 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1574 ggcttagttg tcagttgtgg	20
45	<210> 1575 <211> 21 <212> DNA <213> synthetic construct	
50	<400> 1575 aattccttgc attgataca g	21
55	<210> 1576 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1576	

EP 1 770 171 A1

	gtttgattgt tgcgaggt	18
5	<210> 1577 <211> 24 <212> DNA <213> synthetic construct	
10	<400> 1577 aatctactca attcattttt cctt	24
15	<210> 1578 <211> 26 <212> DNA <213> synthetic construct	
	<400> 1578 ttttactaaa ccattaggtg taaaat	26
20	<210> 1579 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1579 caaaaacttg tggaccttct	20
30	<210> 1580 <211> 23 <212> DNA <213> synthetic construct	
	<400> 1580 catgtattgg ttgtagata ggg	23
35	<210> 1581 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 1581 gaggataagg ccatgactg	19
45	<210> 1582 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1582 gatcaggaag atcaatcagg	20
55	<210> 1583 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1583	

EP 1 770 171 A1

	cttagttccc acaccatcac	20
5	<210> 1584 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 1584 gttgggctac tcttggttg	19
15	<210> 1585 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1585 gtgttgatac gttgttcttc c	21
20	<210> 1586 <211> 22 <212> DNA <213> synthetic construct	
25	<400> 1586 ttacgttaga agaagcatac ca	22
30	<210> 1587 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1587 aggacgatac agggcatt	18
35	<210> 1588 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 1588 tttatgaagg cccaaaga	18
45	<210> 1589 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1589 agccagaatt agcatcaaca	20
55	<210> 1590 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1590	

EP 1 770 171 A1

	tttacctcac cgaccaatc	19
5	<210> 1591 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 1591 tggctgaaga agctcaac	18
15	<210> 1592 <211> 20 <212> DNA <213> synthetic construct	
20	<400> 1592 tctgtttacg ttagcggctc	20
25	<210> 1593 <211> 21 <212> DNA <213> synthetic construct	
30	<400> 1593 tccctaagtt cattgacaac a	21
35	<210> 1594 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 1594 ggcgacgaag ttaaagtg	18
45	<210> 1595 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 1595 aatggtgac ggtccttc	18
55	<210> 1596 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1596 gatacgaaga agatagcgaa a	21
	<210> 1597 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1597	

EP 1 770 171 A1

	acaatagcca tcccagcta	19
5	<210> 1598 <211> 22 <212> DNA <213> synthetic construct	
10	<400> 1598 aagatgggtac gtgtattcgt tt	22
15	<210> 1599 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1599 aattacttct gtcgccttca	20
20	<210> 1600 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1600 ttatttctgt tgagggcaaa	20
30	<210> 1601 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1601 tctttctcca cttcttctgg	20
35	<210> 1602 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1602 ttgatcgttt tgacgtaatg	20
45	<210> 1603 <211> 21 <212> DNA <213> synthetic construct	
50	<400> 1603 taatcgtttc tttctctttg g	21
55	<210> 1604 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1604	

EP 1 770 171 A1

	agcgactaga gagcatacaa g	21
5	<210> 1605 <211> 22 <212> DNA <213> synthetic construct	
10	<400> 1605 tcagagcatc aaataaatca ac	22
15	<210> 1606 <211> 19 <212> DNA <213> synthetic construct	
20	<400> 1606 aaattgttgc acgtatgga	19
25	<210> 1607 <211> 18 <212> DNA <213> synthetic construct	
30	<400> 1607 tttgccgact aaacacct	18
35	<210> 1608 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 1608 caatggaaca aaggccact	19
45	<210> 1609 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 1609 tgcttggcga actaaagc	18
55	<210> 1610 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1610 ctgcggttaa agtcgttg	18
	<210> 1611 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1611	

EP 1 770 171 A1

	aatcacgtag ccttacatcc	20
5	<210> 1612 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1612 atccgactat gcgtttactg	20
15	<210> 1613 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1613 tatgttcgcc aatttccttc	20
20	<210> 1614 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1614 aggatcaatc gtaaatggtg	20
30	<210> 1615 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1615 ttcgctgcaa tcttatcc	18
35	<210> 1616 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1616 aagatggtga aacattggtg	20
45	<210> 1617 <211> 21 <212> DNA <213> synthetic construct	
50	<400> 1617 tctttaatct cagctttttg c	21
55	<210> 1618 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1618	

EP 1 770 171 A1

	gtttccgttc aaataaccac	20
5	<210> 1619 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 1619 caattcacgc acttcctttat c	21
15	<210> 1620 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1620 aattgcagga gggtcaca	18
20	<210> 1621 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1621 cttcagaggt cgctaaatca	20
30	<210> 1622 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1622 aatgcgtgat cagggtgtat	20
35	<210> 1623 <211> 27 <212> DNA <213> synthetic construct	
40	<400> 1623 tgtaattatg agtcgaacat ttttatt	27
45	<210> 1624 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1624 ctcaacagct tcaacaatcc	20
55	<210> 1625 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1625	

EP 1 770 171 A1

	ccactattcg atcttccttg	20
5	<210> 1626 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1626 aggttttagaa gtgggggagt	20
15	<210> 1627 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1627 atcggcgctt taatcggt	18
20	<210> 1628 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1628 aacgcacatc tgaaagctac	20
30	<210> 1629 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1629 tacctgaacg agctgaatg	19
35	<210> 1630 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1630 atggaggggtg ataacatgaa	20
45	<210> 1631 <211> 23 <212> DNA <213> synthetic construct	
50	<400> 1631 aagatagttc tgataaccaa tcg	23
55	<210> 1632 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1632	

EP 1 770 171 A1

	caggaggaac attggttgt	19
5	<210> 1633 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 1633 cgtcataccc tggattggt	19
15	<210> 1634 <211> 22 <212> DNA <213> synthetic construct	
	<400> 1634 cgacagaact tgctaaagta ga	22
20	<210> 1635 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 1635 gtgattocgc catagttg	18
30	<210> 1636 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1636 cttctttcgt gctttcaac	19
35	<210> 1637 <211> 21 <212> DNA <213> synthetic construct	
40	<400> 1637 aaatttagat catcattttg c	21
45	<210> 1638 <211> 22 <212> DNA <213> synthetic construct	
50	<400> 1638 aaacctggat gatagtgata gg	22
55	<210> 1639 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1639	

EP 1 770 171 A1

	gactcatttc ctgctgatg	19
5	<210> 1640 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 1640 caaggagagc atagtgaatg t	21
15	<210> 1641 <211> 26 <212> DNA <213> synthetic construct	
	<400> 1641 tgcaatagga attaagagta ataaaa	26
20	<210> 1642 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1642 gttagggcac ttagcttttg	20
30	<210> 1643 <211> 27 <212> DNA <213> synthetic construct	
	<400> 1643 tgggtatatt agttttaatt tcctatt	27
35	<210> 1644 <211> 23 <212> DNA <213> synthetic construct	
40	<400> 1644 tggaaaattt aagtgtagtt cct	23
45	<210> 1645 <211> 24 <212> DNA <213> synthetic construct	
50	<400> 1645 ctactcctaa gcctatggta aaac	24
55	<210> 1646 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1646	

EP 1 770 171 A1

	agcaaagtgg taacgagaag	20
5	<210> 1647 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 1647 atacgcatca actcaggata g	21
15	<210> 1648 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1648 tagttggaat gaccgagaac	20
20	<210> 1649 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1649 agtgtaacgg acgataaagg	20
30	<210> 1650 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1650 tcaacgtcac aaacaagaac	20
35	<210> 1651 <211> 21 <212> DNA <213> synthetic construct	
40	<400> 1651 cctaagagac ttccttcac c	21
45	<210> 1652 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 1652 tcggaagtat tgcgtttg	18
55	<210> 1653 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1653	

EP 1 770 171 A1

	ttatcgacat tctctgtttc c	21
5	<210> 1654 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 1654 ttgtcttttg gcttctctc	19
15	<210> 1655 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1655 tttctgtatt gcttcttggt c	21
20	<210> 1656 <211> 23 <212> DNA <213> synthetic construct	
25	<400> 1656 ctatagattc cctatcttgt tgg	23
30	<210> 1657 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1657 atatttaccg caatgaaaca c	21
35	<210> 1658 <211> 27 <212> DNA <213> synthetic construct	
40	<400> 1658 atgtatgtat cttttgttct aagttgt	27
45	<210> 1659 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1659 aaatcccaat cgtctaagtg	20
55	<210> 1660 <211> 26 <212> DNA <213> synthetic construct	
	<400> 1660	

EP 1 770 171 A1

	aaagtactac cttttattgc cttagt	26
5	<210> 1661 <211> 26 <212> DNA <213> synthetic construct	
10	<400> 1661 tgttttataa gtgttccttg tttttc	26
15	<210> 1662 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1662 tgaacaaaaa gcacaggata g	21
20	<210> 1663 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 1663 tactaaaccc ccgttggtg	18
30	<210> 1664 <211> 24 <212> DNA <213> synthetic construct	
	<400> 1664 tgatgaaaat ttaaaagaag aagc	24
35	<210> 1665 <211> 23 <212> DNA <213> synthetic construct	
40	<400> 1665 taaatcctcc attaaatcct cca	23
45	<210> 1666 <211> 21 <212> DNA <213> synthetic construct	
50	<400> 1666 tcaaatacac gtaagccttc t	21
55	<210> 1667 <211> 22 <212> DNA <213> synthetic construct	
	<400> 1667	

EP 1 770 171 A1

	aagttttcat ttcgagaagt tg	22
5	<210> 1668 <211> 25 <212> DNA <213> synthetic construct	
10	<400> 1668 cattatatttc attaggggat attag	25
15	<210> 1669 <211> 23 <212> DNA <213> synthetic construct	
	<400> 1669 agattcctta ctttagcttt tcc	23
20	<210> 1670 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 1670 ttgcgatttc tgttgtagg	19
30	<210> 1671 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1671 aaccaaagtc aaacccatc	19
35	<210> 1672 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 1672 aatcaagccg ctgaaaag	18
45	<210> 1673 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1673 caaathtagc ttggtttcc	20
55	<210> 1674 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1674	

EP 1 770 171 A1

	aaatgggtga aggaagatta g	21
5	<210> 1675 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1675 accagtgcctt tctattccag	20
15	<210> 1676 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1676 aggtacaggc atctttgttg	20
20	<210> 1677 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 1677 ttccataatt gttccatctg t	21
30	<210> 1678 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1678 ctggttcaaa agaagccatt	20
35	<210> 1679 <211> 22 <212> DNA <213> synthetic construct	
40	<400> 1679 tttagtttgt caacaatcac tg	22
45	<210> 1680 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1680 gatcgcgtcg taattagagt	20
50	<210> 1681 <211> 20 <212> DNA <213> synthetic construct	
55	<400> 1681	

EP 1 770 171 A1

	ttcaacagtg gcaataatgt	20
5	<210> 1682 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 1682 atctcgcgga acaattaga	19
15	<210> 1683 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1683 aataagccaa tccacatata a	21
20	<210> 1684 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1684 tcggctctaa tggatatgtc	20
30	<210> 1685 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1685 gttgacgtgc ttgttcttc	19
35	<210> 1686 <211> 23 <212> DNA <213> synthetic construct	
40	<400> 1686 gcttcattag cattagaaca atc	23
45	<210> 1687 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1687 aaacctgcat ccatactac	20
50	<210> 1688 <211> 22 <212> DNA <213> synthetic construct	
55	<400> 1688	

EP 1 770 171 A1

	ttaactgaac aagaaaagca ag	22
5	<210> 1689 <211> 24 <212> DNA <213> synthetic construct	
10	<400> 1689 ttaaatctcc tgaaatagaa actg	24
15	<210> 1690 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1690 acaaccaaca gtgaaagcta c	21
20	<210> 1691 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1691 ttgttagcca attctgcttc	20
30	<210> 1692 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1692 cattggtggc tatttcattc	20
35	<210> 1693 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1693 ctttctgctt ccattgtttc	20
45	<210> 1694 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1694 tatcttagct tcgcaaccag	20
55	<210> 1695 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1695	

EP 1 770 171 A1

	attgtctgcc acgtataacc	20
5	<210> 1696 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 1696 gagcaacgtc tcttcttcc	19
15	<210> 1697 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1697 gagcgtgtct atcgcatc	18
20	<210> 1698 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 1698 ttcacgcaa taatcggtc	19
30	<210> 1699 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1699 taacacatcc gccatcac	18
35	<210> 1700 <211> 22 <212> DNA <213> synthetic construct	
40	<400> 1700 tcttcatttg ttgaatatgc tg	22
45	<210> 1701 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1701 tggaatcgaa cctgtttatc	20
55	<210> 1702 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1702	

EP 1 770 171 A1

	attattgtcg cctctttcc	19
5	<210> 1703 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 1703 gctatttggt atcgattct g	21
15	<210> 1704 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1704 ctctgatcc tcttcttg	20
20	<210> 1705 <211> 23 <212> DNA <213> synthetic construct	
25	<400> 1705 atgttatact ctgctcttca acc	23
30	<210> 1706 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1706 cggatgaagg aagtaaagaa	20
35	<210> 1707 <211> 23 <212> DNA <213> synthetic construct	
40	<400> 1707 catatgctcg taaatacttg aaa	23
45	<210> 1708 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 1708 aaagcgattt gttgctga	18
55	<210> 1709 <211> 25 <212> DNA <213> synthetic construct	
	<400> 1709	

EP 1 770 171 A1

	gaaaattaaa ttagcaagga taaaa	25
5	<210> 1710 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 1710 agccggtaaa ctcagtcc	18
15	<210> 1711 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1711 caccataagg caattgaag	19
20	<210> 1712 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 1712 attactogtt tcccctgac	19
30	<210> 1713 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1713 acaatcgtca caactgacac	20
35	<210> 1714 <211> 22 <212> DNA <213> synthetic construct	
40	<400> 1714 atgttgaaga aagaaacaat ga	22
45	<210> 1715 <211> 24 <212> DNA <213> synthetic construct	
50	<400> 1715 ctgaataatt tcttaaaggg aaaa	24
55	<210> 1716 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1716	

EP 1 770 171 A1

	tcagtcagtt tcttgacctt t	21
5	<210> 1717 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1717 ttagtcggtt tctttccatc	20
15	<210> 1718 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1718 ccaattaggt gaagcagaac	20
20	<210> 1719 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 1719 tttgatgggt gctaaataag g	21
30	<210> 1720 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1720 gattgccttt cctttctatg	20
35	<210> 1721 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 1721 acatctttga cggttctc	19
45	<210> 1722 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1722 caagaacaag aaactcagca	20
55	<210> 1723 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1723	

EP 1 770 171 A1

	catgtaacgg cagtggag	18
5	<210> 1724 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 1724 aaattcactt actgcaccag a	21
15	<210> 1725 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1725 atggcgaaag aatatgtcaa	20
20	<210> 1726 <211> 24 <212> DNA <213> synthetic construct	
25	<400> 1726 gcatatttcg cttgatatat aggt	24
30	<210> 1727 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1727 ttattcatgc tggattattc g	21
35	<210> 1728 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1728 atatttcac cccagctctt	20
45	<210> 1729 <211> 26 <212> DNA <213> synthetic construct	
50	<400> 1729 aagtatgaaa gagataaaac aaacat	26
55	<210> 1730 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1730	

EP 1 770 171 A1

	agcagttccg gtatctcttt	20
5	<210> 1731 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 1731 tgaagaaagg gtaatgtttt g	21
15	<210> 1732 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1732 tgaagtcctt tgcctttggt g	21
20	<210> 1733 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 1733 caatacacac cgatttagag g	21
30	<210> 1734 <211> 27 <212> DNA <213> synthetic construct	
	<400> 1734 tctattaaac agacacaact tatctat	27
35	<210> 1735 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1735 ccgggatcta attcatattt	20
45	<210> 1736 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1736 ttcataagga cgatgtgttg	20
55	<210> 1737 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1737	

EP 1 770 171 A1

	tggtctagct cttgctttcc	20
5	<210> 1738 <211> 24 <212> DNA <213> synthetic construct	
10	<400> 1738 attatgtgaa gatcaaatta taca	24
15	<210> 1739 <211> 21 <212> DNA <213> synthetic construct	
20	<400> 1739 ttttggtgca tctatccttt c	21
25	<210> 1740 <211> 19 <212> DNA <213> synthetic construct	
30	<400> 1740 atcttgatct tgccattcc	19
35	<210> 1741 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1741 tgctttctca atcttcggtt	20
45	<210> 1742 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 1742 tgaatcttca gcaacaga	18
55	<210> 1743 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1743 tttggttggt caggtggt	18
	<210> 1744 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1744	

EP 1 770 171 A1

	aggatcattt gtctcctacg	20
5	<210> 1745 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 1745 atggtgcgct tagcaaat	18
15	<210> 1746 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1746 ctgatcaacg acgcatgg	18
20	<210> 1747 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 1747 gcgctgagct ggtatcct	18
30	<210> 1748 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1748 ccgatcgagt ccattacc	18
35	<210> 1749 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 1749 gcgtacggcg aatttact	18
45	<210> 1750 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1750 gcctgcttcg ttgatagatt	20
55	<210> 1751 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1751	

EP 1 770 171 A1

	atactgccgc ctgcttgt	18
5	<210> 1752 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 1752 gccaccttta ttccttcc	18
15	<210> 1753 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1753 agcatcccca tcatatacag	20
20	<210> 1754 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 1754 gtcagcatcg aggcattg	18
30	<210> 1755 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1755 cgtcaatcat ctgctcaac	19
35	<210> 1756 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1756 gttgttctcc actaccact	20
45	<210> 1757 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1757 agatcacctc aatccagaaa	20
50	<210> 1758 <211> 19 <212> DNA <213> synthetic construct	
55	<400> 1758	

EP 1 770 171 A1

	gacttcgggt ttttcacac	19
5	<210> 1759 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 1759 cggtagatgc gttttgtc	18
15	<210> 1760 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1760 ccagctcgga aaacttct	18
20	<210> 1761 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 1761 ggcgattgtc cataacgtc	19
30	<210> 1762 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1762 taacggcaaa gacgctaa	18
35	<210> 1763 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 1763 tgaccagggc ttctacttc	19
45	<210> 1764 <211> 21 <212> DNA <213> synthetic construct	
50	<400> 1764 cctataatat ctttgccacc a	21
55	<210> 1765 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1765	

EP 1 770 171 A1

	ccagggatcc agagtttt	18
5	<210> 1766 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 1766 gcttgaaatg ccaaagtg	18
15	<210> 1767 <211> 22 <212> DNA <213> synthetic construct	
	<400> 1767 cagatcagaa acagagatac ga	22
20	<210> 1768 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 1768 cagtcaggaa cacagcatt	19
30	<210> 1769 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1769 tctaaggtat aagccgcac	20
35	<210> 1770 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 1770 ccggtaccga tgttgatt	18
45	<210> 1771 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1771 gagtgaggag ggtatgttga	20
55	<210> 1772 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1772	

EP 1 770 171 A1

	ccgatcatga gaacatcag	19
5	<210> 1773 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 1773 ggcatctctt cctgggttag	19
15	<210> 1774 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1774 agagatgggc tgcaaact	18
20	<210> 1775 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 1775 cgatccctaa atgctgtct	19
30	<210> 1776 <211> 23 <212> DNA <213> synthetic construct	
	<400> 1776 acagattaca ttgtcatttc ctg	23
35	<210> 1777 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 1777 cctcctcaaa aacctgttc	19
45	<210> 1778 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 1778 atggattttg ccttacc	18
55	<210> 1779 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1779	

EP 1 770 171 A1

	ccaagtaaca tcaccagacc	20
5	<210> 1780 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 1780 tatttacctt tcccgggtca	19
15	<210> 1781 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1781 caatcacgaa ctgcgttt	18
20	<210> 1782 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1782 tgctgctgat accaatgtag	20
30	<210> 1783 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1783 gtaatttcgt aagtcgcgta g	21
35	<210> 1784 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 1784 cgcaatacca taccttcac	19
45	<210> 1785 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 1785 ctcggtggatc tgatacgg	18
55	<210> 1786 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1786	

EP 1 770 171 A1

	gtgcggtttaa tctcctcaag	20
5	<210> 1787 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 1787 gctatccgga caacttcg	18
15	<210> 1788 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1788 aaattgccga agctcaat	18
20	<210> 1789 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 1789 ctgacgggtca tcagcagt	18
30	<210> 1790 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1790 agagagcgtc attgagca	18
35	<210> 1791 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 1791 aattttcgcc agttgatg	18
45	<210> 1792 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 1792 acagggttga tcctcgtc	18
55	<210> 1793 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1793	

EP 1 770 171 A1

	gttaatgaaa cggcgaaac	19
5	<210> 1794 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 1794 aaaagacaag ctgttgctg	19
15	<210> 1795 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1795 cagataatcg ggttgtgaa	19
20	<210> 1796 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1796 atttcataaa ctcggttg	20
30	<210> 1797 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1797 ggcaaacagc actacagg	18
35	<210> 1798 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1798 aggttcaggt agctggaaaa	20
45	<210> 1799 <211> 21 <212> DNA <213> synthetic construct	
50	<400> 1799 atgattctgg gttagatctc c	21
55	<210> 1800 <211> 22 <212> DNA <213> synthetic construct	
	<400> 1800	

EP 1 770 171 A1

	tgattcaatt ttagtgatct gc	22
5	<210> 1801 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 1801 aggtgctatc cggctaata	18
15	<210> 1802 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1802 acatgatccc ggagaaat	18
20	<210> 1803 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 1803 ttacaaaatc tctgcaaata g	21
30	<210> 1804 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1804 tggaaccagt gatcaatttc	20
35	<210> 1805 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 1805 gctgctgaac ttccttcc	18
45	<210> 1806 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 1806 ggtgtcatcc caaacctg	18
55	<210> 1807 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1807	

EP 1 770 171 A1

	ggtaccgaag tggtaggtc	18
5	<210> 1808 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 1808 cctgctgcta ttgctgtc	18
15	<210> 1809 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1809 gtatggtgcc agatgctc	18
20	<210> 1810 <211> 23 <212> DNA <213> synthetic construct	
25	<400> 1810 aatttaacct ggtttgataa gaa	23
30	<210> 1811 <211> 26 <212> DNA <213> synthetic construct	
	<400> 1811 caaaatatga actatcagaa agattg	26
35	<210> 1812 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1812 ggggagaata tccttgtctt	20
45	<210> 1813 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 1813 gcagcggcca taattttt	18
55	<210> 1814 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1814	

EP 1 770 171 A1

	gactcgcggg tgattaac	18
5	<210> 1815 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 1815 cagtcacctta atcgctttc	19
15	<210> 1816 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1816 atgaaacgac ctgattgc	18
20	<210> 1817 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 1817 gtgtggaccg aagaattg	18
30	<210> 1818 <211> 23 <212> DNA <213> synthetic construct	
	<400> 1818 ttgcgtatat agaagtcata cca	23
35	<210> 1819 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 1819 gcgtgagctg tctaccag	18
45	<210> 1820 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 1820 gattcctgct ctgacaacc	19
55	<210> 1821 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1821	

EP 1 770 171 A1

	gccttgaata ctggaagaaa g	21
5	<210> 1822 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 1822 attgacggga tatctgacc	19
15	<210> 1823 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1823 acatttgcag catatttgat t	21
20	<210> 1824 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1824 cagcagcaag gtgtttaatg	20
30	<210> 1825 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1825 gcagtggcca gagtatgt	18
35	<210> 1826 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 1826 ggggagaaaag agaccctca	19
45	<210> 1827 <211> 21 <212> DNA <213> synthetic construct	
50	<400> 1827 tatttgcca ggacttctgt t	21
55	<210> 1828 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1828	

EP 1 770 171 A1

	agtaaattca ggctggctct	20
5	<210> 1829 <211> 22 <212> DNA <213> synthetic construct	
10	<400> 1829 ttacgtggg ttacagatat gg	22
15	<210> 1830 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1830 tcatttgaag aacgacacag	20
20	<210> 1831 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 1831 gtcaggccat attggttg	18
30	<210> 1832 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1832 tgcctctatt atccaacctc	20
35	<210> 1833 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1833 gacgatccag aatgctaaac	20
45	<210> 1834 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1834 ggtttaaggc aggtagtcag	20
55	<210> 1835 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1835	

EP 1 770 171 A1

	ccacgataca tgaacacag	20
5	<210> 1836 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1836 gtggcattgg tcgttatagt	20
15	<210> 1837 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1837 caaggacgga ctctttctc	19
20	<210> 1838 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 1838 tgacctatca ctcgatatt g	21
30	<210> 1839 <211> 22 <212> DNA <213> synthetic construct	
	<400> 1839 agagctggaa gagaatgtat tt	22
35	<210> 1840 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 1840 ttcaggcgaa atgctatg	18
45	<210> 1841 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1841 tggttccgta gaggaataag	20
55	<210> 1842 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1842	

EP 1 770 171 A1

	gctatgaact gatcctggtg	20
5	<210> 1843 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1843 cgatatggcg tactttatcc	20
15	<210> 1844 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1844 ctctgcctct attgctcttg	20
20	<210> 1845 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1845 gcactatatac cctgctcttg	20
30	<210> 1846 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1846 tatcgatgcg gatgaaaat	19
35	<210> 1847 <211> 24 <212> DNA <213> synthetic construct	
40	<400> 1847 ttaatataac cttcaagcaa cact	24
45	<210> 1848 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1848 atccaatgac cagaaatgag	20
55	<210> 1849 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1849	

EP 1 770 171 A1

	agatatgcgt aatccacagg	20
5	<210> 1850 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1850 cgtaaatatg ggacaaaggt	20
15	<210> 1851 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1851 tagatttcgc acagtcaaag	20
20	<210> 1852 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1852 gcaagggtag aggtgtattg	20
30	<210> 1853 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1853 tggctgtgaa ctttgtgtag	20
35	<210> 1854 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1854 ataagccatg tgtttcttcc	20
45	<210> 1855 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1855 cacgttctag cgtctactca	20
55	<210> 1856 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1856	

EP 1 770 171 A1

	gccggtaatc ttgagctg	18
5	<210> 1857 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 1857 ccgatctgca cgtcgata	18
15	<210> 1858 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1858 cctgctctat tccgtcag	18
20	<210> 1859 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 1859 gatttcctgt acccggatg	19
30	<210> 1860 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1860 ggctgtctgc tatggattt	19
35	<210> 1861 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 1861 ggtcgatcat cagattgg	18
45	<210> 1862 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 1862 tggcgtttat tttctgga	18
55	<210> 1863 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1863	

EP 1 770 171 A1

	gtagcgttgc atgggata	18
5	<210> 1864 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 1864 cgttctcccc tgattctt	18
15	<210> 1865 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1865 tcatagcggg ggctcagt	18
20	<210> 1866 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 1866 cggcgcattt aaaatatac	18
30	<210> 1867 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1867 cattaaccgg caaatagaac	20
35	<210> 1868 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 1868 tattgaaggc accaccag	18
45	<210> 1869 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1869 gatgaatatc ggacaggaac	20
55	<210> 1870 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1870	

EP 1 770 171 A1

	cctggagtgt gcataagg	18
5	<210> 1871 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 1871 cagcgaaaga tggataatg	19
15	<210> 1872 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1872 acacgcatat aaaccgcaac	20
20	<210> 1873 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 1873 gaatccagcg tggagagc	18
30	<210> 1874 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1874 gcgataagtt ttcgatttca	20
35	<210> 1875 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 1875 gctgaccgat ccgttttt	18
45	<210> 1876 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1876 atgtcatggt tccgatactg	20
55	<210> 1877 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1877	

EP 1 770 171 A1

	ctttatcaag cggatactgg	20
5	<210> 1878 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1878 aagctggaac gtactaacga	20
15	<210> 1879 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1879 taatcactgc ggctaataca	20
20	<210> 1880 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 1880 acaggatagc gaacacctc	19
30	<210> 1881 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1881 aaagccagct ccgttttag	18
35	<210> 1882 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1882 atccataccc tgacactcaa	20
45	<210> 1883 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 1883 gatcaacaaa ggccgtaa	18
55	<210> 1884 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1884	

EP 1 770 171 A1

	gcttcaggtg ttgaaaatg	19
5	<210> 1885 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1885 agcagcagca taaaataacc	20
15	<210> 1886 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1886 caagcacaac aagaaatacg	20
20	<210> 1887 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 1887 tagacctcg aagagttgc	19
30	<210> 1888 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1888 gagcgacctt ggattctc	18
35	<210> 1889 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1889 ataagaccca aattaacggc	20
45	<210> 1890 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 1890 atggatgctc gggtactg	18
55	<210> 1891 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1891	

EP 1 770 171 A1

	ctcagctaca gccacgac	18
5	<210> 1892 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 1892 gatcgtctct gccacgac	18
15	<210> 1893 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1893 acattgatgg tgcgtcc	18
20	<210> 1894 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 1894 aggagagaac atgagtcgc	19
30	<210> 1895 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1895 tccttgccc agtagttacc	20
35	<210> 1896 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 1896 aggagcaact gaagcgc	18
45	<210> 1897 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 1897 tctgccttta cccaggac	18
55	<210> 1898 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1898	

EP 1 770 171 A1

	aaggttggca ggatcaac	18
5	<210> 1899 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1899 ctagtggcga aattgaacag	20
15	<210> 1900 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1900 aggcattccat cgagctac	18
20	<210> 1901 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 1901 aacgtccgag caggatac	18
30	<210> 1902 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1902 gcgaggaggt attcgaca	18
35	<210> 1903 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 1903 cccttctgcg agtagtggt	19
45	<210> 1904 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 1904 aaggacttct ggtcggtg	18
55	<210> 1905 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1905	

EP 1 770 171 A1

	caggaacagg tgctcgtag	19
5	<210> 1906 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 1906 ttccctaacg aatgctgtc	19
15	<210> 1907 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1907 cgttgctccc tcatacac	18
20	<210> 1908 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 1908 cgagcaccaa tatcgaac	18
30	<210> 1909 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1909 gagccgtagg tggtatcg	18
35	<210> 1910 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1910 gctttacctt gatcgaactg	20
45	<210> 1911 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1911 tcaatagagc cagtcacacc	20
55	<210> 1912 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1912	

EP 1 770 171 A1

	tgccgtgagt gaaatcag	18
5	<210> 1913 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 1913 cgtagttggc tttccagtt	19
15	<210> 1914 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1914 ggtatcaacc cactaaaggt c	21
20	<210> 1915 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1915 gtccagagct tctaccagag	20
30	<210> 1916 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1916 gaagtgaact ccgccaag	18
35	<210> 1917 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1917 tcgagcatca tcaggtagac	20
45	<210> 1918 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1918 tcgagaagtc gatgttcaag	20
55	<210> 1919 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1919	

EP 1 770 171 A1

	cttgccgtag tgatgcag	18
5	<210> 1920 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1920 agacctacaa caaggtttcg	20
15	<210> 1921 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1921 tgaggatagt cccttcgc	18
20	<210> 1922 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 1922 attcctctct gaatcgctg	19
30	<210> 1923 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1923 aatatcttca tcgccagttg	20
35	<210> 1924 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 1924 aggaatgacg gaggcttt	18
45	<210> 1925 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 1925 gggttggaca tcagcatc	18
55	<210> 1926 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1926	

EP 1 770 171 A1

	ttcaacctca acggactg	18
5	<210> 1927 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 1927 tgcaaggtac tcaccagc	18
15	<210> 1928 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1928 cattgaaagg tcgtagcg	18
20	<210> 1929 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 1929 cgacgaagtg gatattgg	18
30	<210> 1930 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1930 ggtcaagcac atcctagtg	19
35	<210> 1931 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 1931 acttccttgc ggtactcc	18
45	<210> 1932 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 1932 ccgaaggact tggtttact	19
55	<210> 1933 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1933	

EP 1 770 171 A1

	ctatggaagg tgcctgtg	18
5	<210> 1934 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 1934 cactttccgt tattgcctc	19
15	<210> 1935 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1935 gaggatgagg atgttggc	18
20	<210> 1936 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 1936 gactggctga atcgtctc	18
30	<210> 1937 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1937 gcaggtcgta ccaggaag	18
35	<210> 1938 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 1938 attgtcgatg acgaacctc	19
45	<210> 1939 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1939 ttcaggtaga gctggaaatg	20
55	<210> 1940 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1940	

EP 1 770 171 A1

	cgtttgggac agattgag	18
5	<210> 1941 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 1941 gatactctgc tgacctcgc	19
15	<210> 1942 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1942 aatgcgataa ccatcagc	18
20	<210> 1943 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 1943 ccgtcgtact ggaagttg	18
30	<210> 1944 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1944 ctgggacggtt agtgatc	19
35	<210> 1945 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 1945 gtcttggcat tgagttcg	18
45	<210> 1946 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 1946 aagaagtctc tgctcccc	18
55	<210> 1947 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1947	

EP 1 770 171 A1

	acgatttcct ccacctgt	18
5	<210> 1948 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 1948 atggcagttt cagtgtcg	18
15	<210> 1949 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1949 cgaaatagtc gtccagcc	18
20	<210> 1950 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 1950 aatgtcggca tcattctc	18
30	<210> 1951 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1951 gtagacctcg cgcttgaa	18
35	<210> 1952 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 1952 gacctgctgt tccagttg	18
45	<210> 1953 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 1953 aattcacggg tttctcgc	18
55	<210> 1954 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1954	

EP 1 770 171 A1

	cctgctcaac accttctatc	20
5	<210> 1955 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 1955 gtcgaacaac gcgaacag	18
15	<210> 1956 <211> 19 <212> DNA <213> synthetic construct	
	<400> 1956 gttgaaaggg tttaccgac	19
20	<210> 1957 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 1957 aatttctgca tcgggttc	18
30	<210> 1958 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1958 atgctcgata atgctattcc	20
35	<210> 1959 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 1959 ttctcgtagt aaccctcgg	19
45	<210> 1960 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 1960 gacttcgctg ttcgacttc	19
55	<210> 1961 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1961	

EP 1 770 171 A1

	tcggttcgag ttcatagc	18
5	<210> 1962 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 1962 gtgttccagg tgttcgac	18
15	<210> 1963 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1963 gatagacggt gtccttgacc	20
20	<210> 1964 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 1964 acaacctgga acagcaact	19
30	<210> 1965 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1965 cgactcttgc gcgtattc	18
35	<210> 1966 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 1966 gtcaaggggtg ttgtctgc	18
45	<210> 1967 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 1967 ctctgcacaa actcaggg	18
55	<210> 1968 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1968	

EP 1 770 171 A1

	aagtcggtac tggagtcctt	20
5	<210> 1969 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 1969 tcagcacatc atggaaca	18
15	<210> 1970 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1970 cttcagttcc gagatgcc	18
20	<210> 1971 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 1971 gtaacgaacg ctatcggg	18
30	<210> 1972 <211> 25 <212> DNA <213> synthetic construct	
	<400> 1972 atatacggaa aaagagtttc ttgag	25
35	<210> 1973 <211> 21 <212> DNA <213> synthetic construct	
40	<400> 1973 agcacgccat tctttaactt c	21
45	<210> 1974 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1974 tatacggctt cagaatttcc	20
55	<210> 1975 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1975	

EP 1 770 171 A1

	tggcataagt attggcag	18
5	<210> 1976 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1976 atccagtata ttcctgctcg	20
15	<210> 1977 <211> 20 <212> DNA <213> synthetic construct	
20	<400> 1977 tgcaatttct tcttattggc	20
25	<210> 1978 <211> 20 <212> DNA <213> synthetic construct	
30	<400> 1978 tcgccaataa gaagaaattg	20
35	<210> 1979 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 1979 agtgggtactc gaagggttct	20
45	<210> 1980 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 1980 atcgttctgg tcttccttg	19
55	<210> 1981 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1981 accaaagagt gttgatagcc	20
	<210> 1982 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1982	

EP 1 770 171 A1

	agtcctgttg tatcggtttg	20
5	<210> 1983 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 1983 ctccaggtcg aggaaatg	18
15	<210> 1984 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1984 aacgctttct cgatcagg	18
20	<210> 1985 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 1985 gatactgtgc ggttgtga	18
30	<210> 1986 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1986 ttcgattact acgcctatgg	20
35	<210> 1987 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 1987 ggtccattgc aggatctc	18
45	<210> 1988 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 1988 cccctattcc atacottacc	20
55	<210> 1989 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1989	

EP 1 770 171 A1

	tattgaggac gctgattttc	20
5	<210> 1990 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 1990 gtgcgctaca gctacacg	18
15	<210> 1991 <211> 18 <212> DNA <213> synthetic construct	
	<400> 1991 cttgccttcc caggtatc	18
20	<210> 1992 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 1992 actcttggct tgattttgg	19
30	<210> 1993 <211> 20 <212> DNA <213> synthetic construct	
	<400> 1993 ttgaagtccc atctcttttc	20
35	<210> 1994 <211> 23 <212> DNA <213> synthetic construct	
40	<400> 1994 aaatattggt ggtttacttc gtg	23
45	<210> 1995 <211> 21 <212> DNA <213> synthetic construct	
50	<400> 1995 tcataatttc atctcccttg a	21
55	<210> 1996 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1996	

EP 1 770 171 A1

	ctaaagcatt tggagagatt g	21
5	<210> 1997 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 1997 tggattctat tcgctactcc	20
15	<210> 1998 <211> 21 <212> DNA <213> synthetic construct	
	<400> 1998 tgtaggaact gatttggatg a	21
20	<210> 1999 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 1999 ccataactcc cttaacagca	20
30	<210> 2000 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2000 tttccagaca taaaccatcc	20
35	<210> 2001 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2001 ggcatttcta atcatccaag	20
45	<210> 2002 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2002 tcgtcatctg tactggctctg	20
55	<210> 2003 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2003	

EP 1 770 171 A1

	ctcgtctact gacttgaact tg	22
5	<210> 2004 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2004 gtggaaatct gctggtaaag	20
15	<210> 2005 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2005 gctcattcat ctctcaaag	20
20	<210> 2006 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 2006 gattatcgga gaaattcgtg	20
30	<210> 2007 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2007 gatagtctcc accagatgaa a	21
35	<210> 2008 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 2008 tggacaagca gtgtgtga	18
45	<210> 2009 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2009 taggtctgca caaagattcc	20
50	<210> 2010 <211> 22 <212> DNA <213> synthetic construct	
55	<400> 2010	

EP 1 770 171 A1

	aaaaatgatg acattccttga aa	22
5	<210> 2011 <211> 23 <212> DNA <213> synthetic construct	
10	<400> 2011 ttaatcattg actttacgat ttg	23
15	<210> 2012 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2012 atgctggaaa gtctcttgg	19
20	<210> 2013 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 2013 tttgtttcct taatgcggtt	20
30	<210> 2014 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2014 ggctgtagga gacaatgaag	20
35	<210> 2015 <211> 22 <212> DNA <213> synthetic construct	
40	<400> 2015 ctttggtgac agacgtagag tg	22
45	<210> 2016 <211> 24 <212> DNA <213> synthetic construct	
50	<400> 2016 ttgttagaga gacagaactt gaac	24
55	<210> 2017 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2017	

EP 1 770 171 A1

	agatcgacaa acacctcatc	20
5	<210> 2018 <211> 27 <212> DNA <213> synthetic construct	
10	<400> 2018 aatatatttat ccatggttatt atcctac	27
15	<210> 2019 <211> 20 <212> DNA <213> synthetic construct	
20	<400> 2019 gtcggagcat caattctatc	20
25	<210> 2020 <211> 20 <212> DNA <213> synthetic construct	
30	<400> 2020 tgagggattt attcaggatg	20
35	<210> 2021 <211> 23 <212> DNA <213> synthetic construct	
40	<400> 2021 ttaaaaaagggt tactgatttc cac	23
45	<210> 2022 <211> 22 <212> DNA <213> synthetic construct	
50	<400> 2022 tgctttaact cttttaccaa cc	22
55	<210> 2023 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2023 tggacagaaa attccaataa g	21
	<210> 2024 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2024	

EP 1 770 171 A1

	aaggcaattc caatacaaag	20
5	<210> 2025 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2025 gatggtgcaa gaccttaatc	20
15	<210> 2026 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2026 tttcaatgcc tctcttgg	18
20	<210> 2027 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 2027 tcccagctat caagcctac	19
30	<210> 2028 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2028 tccattagtc aatgagttga aa	22
35	<210> 2029 <211> 25 <212> DNA <213> synthetic construct	
40	<400> 2029 gtcacataaaa cattctctct acctt	25
45	<210> 2030 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2030 gaagcatacg acaaacttcc	20
55	<210> 2031 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2031	

EP 1 770 171 A1

	tcaggtagcg atcatactcc	20
5	<210> 2032 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 2032 gtgatagtga acttgggatt g	21
15	<210> 2033 <211> 20 <212> DNA <213> synthetic construct	
20	<400> 2033 aacgccagta aagagatgac	20
25	<210> 2034 <211> 18 <212> DNA <213> synthetic construct	
30	<400> 2034 agagcaaaaa cgctgggtt	18
35	<210> 2035 <211> 22 <212> DNA <213> synthetic construct	
40	<400> 2035 tagtaattcc acacagaaag ca	22
45	<210> 2036 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2036 acgaacagtg gacctgatac	20
55	<210> 2037 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2037 taaaccttgc gaaataatgg	20
	<210> 2038 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2038	

EP 1 770 171 A1

	ttgtcttgac tggttgtgtc	20
5	<210> 2039 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2039 ctactccgtg aagtgaaagg	20
15	<210> 2040 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2040 tgcaaaaggt tagaatgatt g	21
20	<210> 2041 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 2041 aagtcagagt agggaggaaa g	21
30	<210> 2042 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2042 gttcggtaat ccagttgaag	20
35	<210> 2043 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2043 ttaacagacg cagtcaagag	20
45	<210> 2044 <211> 22 <212> DNA <213> synthetic construct	
50	<400> 2044 cgtggaaatt ttagaagaac tc	22
55	<210> 2045 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2045	

EP 1 770 171 A1

	caaggactgg tttttctttg	20
5	<210> 2046 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 2046 aaaatttggg ggattcagt	19
15	<210> 2047 <211> 20 <212> DNA <213> synthetic construct	
20	<400> 2047 tcataagcag cagtaaccaa	20
25	<210> 2048 <211> 20 <212> DNA <213> synthetic construct	
30	<400> 2048 cctctaaggc tatgatggaa	20
35	<210> 2049 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2049 ctattaaggg attgcgtttg	20
45	<210> 2050 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2050 tgaaagatgg acgagatagg	20
55	<210> 2051 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2051 gatgggctag gtaagatttg	20
	<210> 2052 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2052	

EP 1 770 171 A1

	tacatggatg ctggtggag	19
5	<210> 2053 <211> 24 <212> DNA <213> synthetic construct	
10	<400> 2053 gatctaggat ggcaagaata taag	24
15	<210> 2054 <211> 24 <212> DNA <213> synthetic construct	
	<400> 2054 catatggtac atttgattta ttgc	24
20	<210> 2055 <211> 26 <212> DNA <213> synthetic construct	
25	<400> 2055 gtgtcaatat ggtagtcttt aacatc	26
30	<210> 2056 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2056 ctcctagtgc cctatatctt tg	22
35	<210> 2057 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 2057 tacgatgatt ggccttga	18
45	<210> 2058 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 2058 cttggtgcac agagtcc	18
55	<210> 2059 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2059	

EP 1 770 171 A1

	ttttcgatcat tcatttttga	20
5	<210> 2060 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2060 aagtaggcga tggttatgtc	20
15	<210> 2061 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2061 tatttcctga atcctgatgg	20
20	<210> 2062 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 2062 gcacatctctcg ttatgtcttt g	21
30	<210> 2063 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2063 tttggagcctt tgtatgtgtg	20
35	<210> 2064 <211> 24 <212> DNA <213> synthetic construct	
40	<400> 2064 gaccattacc actttattcc ttac	24
45	<210> 2065 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2065 tttgctcttc tgtcaagtc	20
55	<210> 2066 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2066	

EP 1 770 171 A1

	tttcatttct tatttctctcc a	21
5	<210> 2067 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2067 gcttattcac aggctcattt	20
15	<210> 2068 <211> 21 <212> DNA <213> synthetic construct	
20	<400> 2068 gatttctgta tgaggcagtt c	21
25	<210> 2069 <211> 19 <212> DNA <213> synthetic construct	
30	<400> 2069 cttcctagcg tccaatacc	19
35	<210> 2070 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2070 ggctgttagt ccaagtcaag	20
45	<210> 2071 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2071 gctacctgta accattgctc	20
55	<210> 2072 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2072 cttgtgctgt tcttcggtg	19
	<210> 2073 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2073	

EP 1 770 171 A1

	cttgcgctac cgtgggttt	18
5	<210> 2074 <211> 23 <212> DNA <213> synthetic construct	
10	<400> 2074 ttgatattcca acaactacaa aaa	23
15	<210> 2075 <211> 23 <212> DNA <213> synthetic construct	
	<400> 2075 agctttttgg tattcatcta cag	23
20	<210> 2076 <211> 24 <212> DNA <213> synthetic construct	
25	<400> 2076 aggaaacaga aaataaagag aaac	24
30	<210> 2077 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2077 caaacggagc attgatagac	20
35	<210> 2078 <211> 21 <212> DNA <213> synthetic construct	
40	<400> 2078 cattgaaacc aggagaaaag g	21
45	<210> 2079 <211> 26 <212> DNA <213> synthetic construct	
50	<400> 2079 tttttactct caactttctc ttttgc	26
55	<210> 2080 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2080	

EP 1 770 171 A1

	aaaagcgaaa gttaagagtg aa	22
5	<210> 2081 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 2081 ggatgggctt ggaagagt	18
15	<210> 2082 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2082 aagatattgc caacctcaac	20
20	<210> 2083 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 2083 ggatatgacc gtagcaacta a	21
30	<210> 2084 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2084 gcttgatatga cgatagagga g	21
35	<210> 2085 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 2085 tagctcagtc agaccacga	19
45	<210> 2086 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 2086 ttgtagggct aggaacagg	19
55	<210> 2087 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2087	

EP 1 770 171 A1

	aatctgaact ccattctcgtc	20
5	<210> 2088 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 2088 atgacgcgct atgctttg	18
15	<210> 2089 <211> 27 <212> DNA <213> synthetic construct	
	<400> 2089 ataggcagtc ttagaatagg attcttc	27
20	<210> 2090 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 2090 aaccatgtat tgaggaaagt g	21
30	<210> 2091 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2091 tggaagtttg tatgagtgac ag	22
35	<210> 2092 <211> 21 <212> DNA <213> synthetic construct	
40	<400> 2092 ggacttcctt ttcttatcca g	21
45	<210> 2093 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2093 cagtccatag aggctgtttt	20
55	<210> 2094 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2094	

EP 1 770 171 A1

	tttgcagatt tgtgagattg	20
5	<210> 2095 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2095 tacgtttaca gatgctacgg	20
15	<210> 2096 <211> 20 <212> DNA <213> synthetic construct	
20	<400> 2096 aatagcagta gcagggacag	20
25	<210> 2097 <211> 20 <212> DNA <213> synthetic construct	
30	<400> 2097 tgctccgtat ctctcaaatac	20
35	<210> 2098 <211> 25 <212> DNA <213> synthetic construct	
40	<400> 2098 atgaatttaa catttttagg cttat	25
45	<210> 2099 <211> 27 <212> DNA <213> synthetic construct	
50	<400> 2099 tatttgataa taaatgagaa gacaaga	27
55	<210> 2100 <211> 25 <212> DNA <213> synthetic construct	
	<400> 2100 atgagtgaata taggcttttaa ataca	25
	<210> 2101 <211> 24 <212> DNA <213> synthetic construct	
	<400> 2101	

EP 1 770 171 A1

	caccttgcca agatatttac tatt	24
5	<210> 2102 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 2102 ttgcacttta taccctccat t	21
15	<210> 2103 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2103 gttacatcaa ttcccatcgt	20
20	<210> 2104 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 2104 aagtaggggc tttcttgc	18
30	<210> 2105 <211> 23 <212> DNA <213> synthetic construct	
	<400> 2105 aactttcttt cttaccacta ccc	23
35	<210> 2106 <211> 25 <212> DNA <213> synthetic construct	
40	<400> 2106 taacgagatt attacaaaac aaaac	25
45	<210> 2107 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2107 tccttaggct ggaatgtgtc	20
50	<210> 2108 <211> 19 <212> DNA <213> synthetic construct	
55	<400> 2108	

EP 1 770 171 A1

	gaaagaattg ggtgcaaag	19
5	<210> 2109 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2109 tcatacctcac cattaccaac	20
15	<210> 2110 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2110 gcttccatca aatcacttta c	21
20	<210> 2111 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 2111 gtgcaacatt actgccttc	19
30	<210> 2112 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2112 tggaagacct ttatcctgtc	20
35	<210> 2113 <211> 26 <212> DNA <213> synthetic construct	
40	<400> 2113 aaaatagtta atagcagtaa aacctg	26
45	<210> 2114 <211> 22 <212> DNA <213> synthetic construct	
50	<400> 2114 ctataatggg gagcgatatt tg	22
55	<210> 2115 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2115	

EP 1 770 171 A1

	agaacaacac cttcccatac	20
5	<210> 2116 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 2116 cgtatcaagt cggcattt	18
15	<210> 2117 <211> 23 <212> DNA <213> synthetic construct	
20	<400> 2117 gcaatattatc aaagttatca tcc	23
25	<210> 2118 <211> 18 <212> DNA <213> synthetic construct	
30	<400> 2118 ggatatgccca gcaaaaac	18
35	<210> 2119 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 2119 tgtcaaaaatc tggaacgag	19
45	<210> 2120 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 2120 atcaacgact tccaccaa	18
55	<210> 2121 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2121 aatatattacg caaggtttca ag	22
	<210> 2122 <211> 25 <212> DNA <213> synthetic construct	
	<400> 2122	

EP 1 770 171 A1

	agattacact ttacagcta tctcc	25
5	<210> 2123 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2123 tcaactccct tccataaatac	20
15	<210> 2124 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2124 tctggactct cgataattgg	20
20	<210> 2125 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 2125 aggagaacac accaggaag	19
30	<210> 2126 <211> 24 <212> DNA <213> synthetic construct	
	<400> 2126 acatttggtta tagtttcctt gttg	24
35	<210> 2127 <211> 23 <212> DNA <213> synthetic construct	
40	<400> 2127 tttggtaagt tgagatttag gac	23
45	<210> 2128 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2128 ttttaaccca ccaagttgac	20
55	<210> 2129 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2129	

EP 1 770 171 A1

	gataaccgata gcttggactg	20
5	<210> 2130 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 2130 gtggatgctc aagaaactg	19
15	<210> 2131 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2131 cttatgttcg gctaattgtt c	21
20	<210> 2132 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 2132 attatcactg gcggaaaga	19
30	<210> 2133 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2133 gataagagcc gtctgaatgt	20
35	<210> 2134 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 2134 aatggaatga acggaagtg	19
45	<210> 2135 <211> 21 <212> DNA <213> synthetic construct	
50	<400> 2135 tgttctctct tttccctag c	21
55	<210> 2136 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2136	

EP 1 770 171 A1

	ggccaactgt ccatactctcc	20
5	<210> 2137 <211> 22 <212> DNA <213> synthetic construct	
10	<400> 2137 gactgatttc accaataactt cc	22
15	<210> 2138 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2138 agtcgcacta gccacatt	18
20	<210> 2139 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 2139 gagaatcaaa gccaccatc	19
30	<210> 2140 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2140 atttcgagtg ttgcttatgg	20
35	<210> 2141 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2141 gtaaagtgag ccgtcaaatac	20
45	<210> 2142 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2142 gggtaactat gcgaattctg	20
55	<210> 2143 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2143	

EP 1 770 171 A1

	agcttttacac catcatctcc	20
5	<210> 2144 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 2144 gatcaacaag ctgaagaaga c	21
15	<210> 2145 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2145 catctttcac ccaacctg	18
20	<210> 2146 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 2146 gtgtcagcac aaattacgat t	21
30	<210> 2147 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2147 tcgtcactca ccttggaa	18
35	<210> 2148 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2148 tgttcggatt gagctagaag	20
45	<210> 2149 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 2149 taattttacg gtgggggttg	19
55	<210> 2150 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2150	

EP 1 770 171 A1

	atctgtagaa ggtcttggtt tc	22
5	<210> 2151 <211> 23 <212> DNA <213> synthetic construct	
10	<400> 2151 attctaaatc acctgaactc ttg	23
15	<210> 2152 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2152 atttgtgagg atcttggtga g	21
20	<210> 2153 <211> 23 <212> DNA <213> synthetic construct	
25	<400> 2153 ggtattcttc tctatcaaac tgg	23
30	<210> 2154 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2154 caacttctga ttatgccttt g	21
35	<210> 2155 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 2155 tcctaattgtc cgtccaatc	19
45	<210> 2156 <211> 24 <212> DNA <213> synthetic construct	
50	<400> 2156 agtggaaacta tgtgtttaat cttg	24
55	<210> 2157 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2157	

EP 1 770 171 A1

	gatgtcagca accatcctac	20
5	<210> 2158 <211> 23 <212> DNA <213> synthetic construct	
10	<400> 2158 aaagaaacac tcacatacac ctc	23
15	<210> 2159 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2159 aaaccatagc ttgactatca cc	22
20	<210> 2160 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 2160 taaacacgaa gcggaaaa	18
30	<210> 2161 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2161 tcaataaaaa gttgggtagc ac	22
35	<210> 2162 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2162 taatcacatt tgttgccatt	20
45	<210> 2163 <211> 23 <212> DNA <213> synthetic construct	
50	<400> 2163 catccaaaat acccataata act	23
55	<210> 2164 <211> 23 <212> DNA <213> synthetic construct	
	<400> 2164	

EP 1 770 171 A1

	cgtacaaaca tacagtttag tgg	23
5	<210> 2165 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2165 tccataatcg ccgtaagtag	20
15	<210> 2166 <211> 19 <212> DNA <213> synthetic construct	
20	<400> 2166 tttggagtcg tggctatct	19
25	<210> 2167 <211> 22 <212> DNA <213> synthetic construct	
30	<400> 2167 gctaagtgcc tctacattaa ca	22
35	<210> 2168 <211> 22 <212> DNA <213> synthetic construct	
40	<400> 2168 tgatcaagaa gtgttcattc aa	22
45	<210> 2169 <211> 26 <212> DNA <213> synthetic construct	
50	<400> 2169 ttatgacaaa acatatcatt atttcc	26
55	<210> 2170 <211> 23 <212> DNA <213> synthetic construct	
	<400> 2170 tgaggtttga tgagaactta aaa	23
	<210> 2171 <211> 25 <212> DNA <213> synthetic construct	
	<400> 2171	

EP 1 770 171 A1

	atccctttaa tgataagtat ttgac	25
5	<210> 2172 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2172 gggttgtcag aagctagaaa	20
15	<210> 2173 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2173 ttattcgctc gtctaattgct	20
20	<210> 2174 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 2174 tattcttggg tggttctgtc	20
30	<210> 2175 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2175 agtggacgaa tgtgttatcc	20
35	<210> 2176 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2176 tacactcggg aatttattgg	20
45	<210> 2177 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2177 aatcaaggga acagacacag	20
55	<210> 2178 <211> 24 <212> DNA <213> synthetic construct	
	<400> 2178	

EP 1 770 171 A1

	tcaggactgt ttatTTTTat gatt	24
5	<210> 2179 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 2179 cgacgataat tccttaattg c	21
15	<210> 2180 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2180 aaagttcgta ttgggtca	18
20	<210> 2181 <211> 23 <212> DNA <213> synthetic construct	
25	<400> 2181 atgagaattc aacaattaca ata	23
30	<210> 2182 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2182 cgtttcctta gggactggt	19
35	<210> 2183 <211> 22 <212> DNA <213> synthetic construct	
40	<400> 2183 ttgccaataa aataagaatg ag	22
45	<210> 2184 <211> 23 <212> DNA <213> synthetic construct	
50	<400> 2184 ttacctatgg ttgtttagat tgg	23
55	<210> 2185 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2185	

EP 1 770 171 A1

	cgaaccctct ttacttggtc	20
5	<210> 2186 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 2186 ctggtgaaga atgtgaagaa g	21
15	<210> 2187 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2187 aaatatcagt aatgggttgt cc	22
20	<210> 2188 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 2188 cgagcataaa cagcatctc	19
30	<210> 2189 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2189 ccagaagaat agggctgac	19
35	<210> 2190 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2190 tcttatcatc tgctgcttcc	20
45	<210> 2191 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 2191 tgacgagaga ggacttggtg	19
55	<210> 2192 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2192	

EP 1 770 171 A1

	agcgatatga tgctttcttt	20
5	<210> 2193 <211> 22 <212> DNA <213> synthetic construct	
10	<400> 2193 gataatgcct tggtaatgtc tt	22
15	<210> 2194 <211> 22 <212> DNA <213> synthetic construct	
20	<400> 2194 aaaaataggc agtctacatt gg	22
25	<210> 2195 <211> 22 <212> DNA <213> synthetic construct	
30	<400> 2195 attcttttaa gtaaacgcgt tc	22
35	<210> 2196 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 2196 agtaatggcc aattgttgc	19
45	<210> 2197 <211> 22 <212> DNA <213> synthetic construct	
50	<400> 2197 tgactaatcc tactttcggg ga	22
55	<210> 2198 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2198 aatccctttg gcttgaga	18
	<210> 2199 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2199	

EP 1 770 171 A1

	aaaactgacc ctaataatcc ac	22
5	<210> 2200 <211> 23 <212> DNA <213> synthetic construct	
10	<400> 2200 ctattataaa gaacgagggc aaa	23
15	<210> 2201 <211> 24 <212> DNA <213> synthetic construct	
	<400> 2201 agtactattc attttagcac gaca	24
20	<210> 2202 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 2202 ccctaaatca agccataaag	20
30	<210> 2203 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2203 tgcaatcata ccacacaaag	20
35	<210> 2204 <211> 25 <212> DNA <213> synthetic construct	
40	<400> 2204 agttttatct attgacgatt taagc	25
45	<210> 2205 <211> 24 <212> DNA <213> synthetic construct	
50	<400> 2205 caaccgtaat ccctotatta tatic	24
55	<210> 2206 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2206	

EP 1 770 171 A1

	tggtctttaac catgctgttg	20
5	<210> 2207 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2207 tcattgattg acgaatgtga	20
15	<210> 2208 <211> 21 <212> DNA <213> synthetic construct	
20	<400> 2208 taatgaatga aggtgtggaa c	21
25	<210> 2209 <211> 21 <212> DNA <213> synthetic construct	
30	<400> 2209 attctgactt ctggcgtact t	21
35	<210> 2210 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2210 aatgggcatt tctcttattg	20
45	<210> 2211 <211> 24 <212> DNA <213> synthetic construct	
50	<400> 2211 gtatagaaga tgaagcagca taaa	24
55	<210> 2212 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2212 tcgaaacett tctgaggtaa	20
	<210> 2213 <211> 24 <212> DNA <213> synthetic construct	
	<400> 2213	

EP 1 770 171 A1

	gaacaggtgt tatcatacta gcaa	24
5	<210> 2214 <211> 22 <212> DNA <213> synthetic construct	
10	<400> 2214 tgaatctgga atgtttgata ag	22
15	<210> 2215 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2215 gaccgatgac gtggataa	18
20	<210> 2216 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 2216 ttattctttc gacgggtatg	20
30	<210> 2217 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2217 atcatcttgc gcttcttg	18
35	<210> 2218 <211> 21 <212> DNA <213> synthetic construct	
40	<400> 2218 gctgaatacg gaataatgaa g	21
45	<210> 2219 <211> 22 <212> DNA <213> synthetic construct	
50	<400> 2219 tggtttagagg aggaattgat ag	22
55	<210> 2220 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2220	

EP 1 770 171 A1

	agtcacgtctg atgcgatt	18
5	<210> 2221 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2221 cgatgaaata tccaagggtt	20
15	<210> 2222 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2222 gcatgaccaa gaggaactaa	20
20	<210> 2223 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 2223 tgtagtaaac cagcgtcaaa	20
30	<210> 2224 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2224 aataccttga aatgtgtcgt g	21
35	<210> 2225 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 2225 ccgtgtggac aatacctg	18
45	<210> 2226 <211> 26 <212> DNA <213> synthetic construct	
50	<400> 2226 acatatgatg tatctatctg gaactc	26
55	<210> 2227 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2227	

EP 1 770 171 A1

	ctgttaaggc ttctacacga c	21
5	<210> 2228 <211> 26 <212> DNA <213> synthetic construct	
10	<400> 2228 tatacaaaat caaaacttga taagga	26
15	<210> 2229 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2229 ttttaatgct gtttgaagtg c	21
20	<210> 2230 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 2230 ggagcgcggtt tagtttacg	19
30	<210> 2231 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2231 gccactactt gtccaccatc	20
35	<210> 2232 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 2232 ctagggaatg gtctgcttg	19
45	<210> 2233 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2233 gagacggatt ggtagagtg	20
55	<210> 2234 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2234	

EP 1 770 171 A1

	tcccacttaa ctatgttgct c	21
5	<210> 2235 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 2235 cttgcctgac tatttgatga c	21
15	<210> 2236 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2236 tagctcatat tgcgcaaag	20
20	<210> 2237 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 2237 tgatggacct ctgttacctc	20
30	<210> 2238 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2238 ttaaatacgc taaagccctc t	21
35	<210> 2239 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2239 aggtgctta atttgacaag	20
45	<210> 2240 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2240 ccggttatgt taatggaaag	20
55	<210> 2241 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2241	

EP 1 770 171 A1

	tcaaatacatc ccaagttagt g	21
5	<210> 2242 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 2242 gctatattggc cctgtgtag	19
15	<210> 2243 <211> 20 <212> DNA <213> synthetic construct	
20	<400> 2243 caaacgtaga tcaatgcaag	20
25	<210> 2244 <211> 22 <212> DNA <213> synthetic construct	
30	<400> 2244 gctcacggtc actaataatc tc	22
35	<210> 2245 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 2245 ctgacaacca gatcaccac	19
45	<210> 2246 <211> 21 <212> DNA <213> synthetic construct	
50	<400> 2246 cccagttcaa ttagattacc c	21
55	<210> 2247 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2247 ttgacttagc ctttgetttc	20
	<210> 2248 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2248	

EP 1 770 171 A1

	tttgatggtg ttgggtatg	19
5	<210> 2249 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2249 aaagaggtag gcatttggtg	20
15	<210> 2250 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2250 tcgaagagat tttctatgat cc	22
20	<210> 2251 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 2251 cagacatttc cttcctcct	19
30	<210> 2252 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2252 caccagacaa cttttctttc	20
35	<210> 2253 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2253 caagtgtaac cagagcttcc	20
45	<210> 2254 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2254 ttaattgcag tagcagcatc	20
55	<210> 2255 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2255	

EP 1 770 171 A1

	agccaccaat aatgaggag	19
5	<210> 2256 <211> 23 <212> DNA <213> synthetic construct	
10	<400> 2256 agcagtaatc ttggtactg ttt	23
15	<210> 2257 <211> 26 <212> DNA <213> synthetic construct	
	<400> 2257 tggatgaagat agatgagata cttaat	26
20	<210> 2258 <211> 23 <212> DNA <213> synthetic construct	
25	<400> 2258 ttatctgatt taggacattt atc	23
30	<210> 2259 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2259 atatcagtta atggacaagc ag	22
35	<210> 2260 <211> 21 <212> DNA <213> synthetic construct	
40	<400> 2260 cacgagaagt tcatttcaat c	21
45	<210> 2261 <211> 22 <212> DNA <213> synthetic construct	
50	<400> 2261 tcaatcgtga taacagacta gc	22
55	<210> 2262 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2262	

EP 1 770 171 A1

	aagaaatgga gcaaacaac	20
5	<210> 2263 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2263 atatccttct gggctattgg	20
15	<210> 2264 <211> 20 <212> DNA <213> synthetic construct	
20	<400> 2264 aacaggttga tcagcatagg	20
25	<210> 2265 <211> 21 <212> DNA <213> synthetic construct	
30	<400> 2265 tgacaacaat tagtgctgaa g	21
35	<210> 2266 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2266 tcaaccata ccattgaaac	20
45	<210> 2267 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2267 cgctatacga ttaccgagac	20
55	<210> 2268 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2268 gcaacgaaga cataatcac	19
	<210> 2269 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2269	

EP 1 770 171 A1

	tggtttcaac ttacactgg	19
5	<210> 2270 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2270 tctggatatt actgccaacc	20
15	<210> 2271 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2271 aacaaccttt agcgtttatt g	21
20	<210> 2272 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 2272 cggtaatgtg cttatagatg g	21
30	<210> 2273 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2273 tttctgtggt tccaggtaag	20
35	<210> 2274 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 2274 cttactggtc ccaaaggtc	19
45	<210> 2275 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2275 tctaatttgc atgcactac	20
55	<210> 2276 <211> 23 <212> DNA <213> synthetic construct	
	<400> 2276	

EP 1 770 171 A1

	aatctactga ctaacaagcc aaa	23
5	<210> 2277 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2277 atcataatcc gctccaatac	20
15	<210> 2278 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2278 tttcaacgta tgggttatgt c	21
20	<210> 2279 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 2279 tgggaaggtc acatcttg	18
30	<210> 2280 <211> 23 <212> DNA <213> synthetic construct	
	<400> 2280 tctcactagg caaacctatt atc	23
35	<210> 2281 <211> 21 <212> DNA <213> synthetic construct	
40	<400> 2281 ccgttcatat aagcaatcat c	21
45	<210> 2282 <211> 21 <212> DNA <213> synthetic construct	
50	<400> 2282 cagacgatca gcaagataaa g	21
55	<210> 2283 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2283	

EP 1 770 171 A1

	ctactaatgg cgcagacata c	21
5	<210> 2284 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 2284 cagaaaccac aacgacaag	19
15	<210> 2285 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2285 aacattggca taggtaggg	19
20	<210> 2286 <211> 26 <212> DNA <213> synthetic construct	
25	<400> 2286 agtgactaag aaacttgatg ttagag	26
30	<210> 2287 <211> 25 <212> DNA <213> synthetic construct	
35	<400> 2287 ctatatctaa atgcccatt ttatc	25
40	<210> 2288 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2288 ttatctgtag ggctcgtctc	20
45	<210> 2289 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2289 caataggcca tcttcgtag	20
55	<210> 2290 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2290	

EP 1 770 171 A1

	gtactagaca tggccgaaaa	20
5	<210> 2291 <211> 22 <212> DNA <213> synthetic construct	
10	<400> 2291 tcagtaacat caacggaata ga	22
15	<210> 2292 <211> 18 <212> DNA <213> synthetic construct	
20	<400> 2292 tccaagccaa cttcacag	18
25	<210> 2293 <211> 21 <212> DNA <213> synthetic construct	
30	<400> 2293 ttgagtaaatt tctgggttcag g	21
35	<210> 2294 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2294 agcattaggt ggatttggtc	20
45	<210> 2295 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2295 tctttcaacc ctttggttagg	20
55	<210> 2296 <211> 26 <212> DNA <213> synthetic construct	
	<400> 2296 tcatactgat ttctacttat ttcacc	26
	<210> 2297 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2297	

EP 1 770 171 A1

	aagtctatatt gctcatgttt cc	22
5	<210> 2298 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2298 ataatactttc atgggtacgg	20
15	<210> 2299 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2299 ttgccctttt atgtatggag	20
20	<210> 2300 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 2300 ttgctagtcc cagtctttat g	21
30	<210> 2301 <211> 23 <212> DNA <213> synthetic construct	
	<400> 2301 cgttgtaatc ttcaatcacc ttc	23
35	<210> 2302 <211> 26 <212> DNA <213> synthetic construct	
40	<400> 2302 gatagtagct gaaagtgaga ataaag	26
45	<210> 2303 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 2303 aggccatagt ttgtcatcc	19
55	<210> 2304 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2304	

EP 1 770 171 A1

	ttaactgcgg aaacaacag	19
5	<210> 2305 <211> 23 <212> DNA <213> synthetic construct	
10	<400> 2305 gagatagcaa atagattggg cag	23
15	<210> 2306 <211> 18 <212> DNA <213> synthetic construct	
20	<400> 2306 taatcgggtcc aaatgggtg	18
25	<210> 2307 <211> 20 <212> DNA <213> synthetic construct	
30	<400> 2307 tcagagccgt catattcttt	20
35	<210> 2308 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 2308 ggaggtttac aaagcagga	19
45	<210> 2309 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2309 gctactgtgc atgaaacaaa	20
55	<210> 2310 <211> 25 <212> DNA <213> synthetic construct	
	<400> 2310 aattagattt gaccattaca gagtt	25
	<210> 2311 <211> 23 <212> DNA <213> synthetic construct	
	<400> 2311	

EP 1 770 171 A1

	ttactcccat tgtatttcat ttc	23
5	<210> 2312 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2312 gtcgttgaaa ttgtctttgg	20
15	<210> 2313 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2313 acttctatcc ccattttatt tg	22
20	<210> 2314 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 2314 cttatgaaga ctgctttgga g	21
30	<210> 2315 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2315 gaaatagaat gaaacaatgc tg	22
35	<210> 2316 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2316 ttctccctac tgggtttctc	20
45	<210> 2317 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2317 atttgccttc tcatogetac	20
55	<210> 2318 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2318	

EP 1 770 171 A1

	agcgatcctt atcttacttg tt	22
5	<210> 2319 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2319 ctctcctatt caacgcaaag	20
15	<210> 2320 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2320 acgtcctctt aacagtcaca a	21
20	<210> 2321 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 2321 tgcgactagg atggtttc	18
30	<210> 2322 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2322 atcaggetgt tatgcgtct	19
35	<210> 2323 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 2323 tgcccatctt tcatttca	18
45	<210> 2324 <211> 22 <212> DNA <213> synthetic construct	
50	<400> 2324 aattgtgaac cagttagaaa cc	22
55	<210> 2325 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2325	

EP 1 770 171 A1

	tgccacctga tagtgagc	18
5	<210> 2326 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 2326 gaagaaacgt gaacgattag a	21
15	<210> 2327 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2327 ttaattggcc atccaaga	18
20	<210> 2328 <211> 22 <212> DNA <213> synthetic construct	
25	<400> 2328 agatatgatt gcaacaattg aa	22
30	<210> 2329 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2329 cgcattgattg atttgataag	20
35	<210> 2330 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2330 gtgaaaagtc gcatcaaatac	20
45	<210> 2331 <211> 21 <212> DNA <213> synthetic construct	
50	<400> 2331 gccataaaca tacatgactc c	21
55	<210> 2332 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2332	

EP 1 770 171 A1

	cagctgttgc agaagattta g	21
5	<210> 2333 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 2333 ccattagctg cttgtgatg	19
15	<210> 2334 <211> 23 <212> DNA <213> synthetic construct	
20	<400> 2334 ttctcttaaa tcaaacagga agt	23
25	<210> 2335 <211> 18 <212> DNA <213> synthetic construct	
30	<400> 2335 acccatttgg cattaacc	18
35	<210> 2336 <211> 22 <212> DNA <213> synthetic construct	
40	<400> 2336 aattgttctc ttattggctt tc	22
45	<210> 2337 <211> 22 <212> DNA <213> synthetic construct	
50	<400> 2337 cctggatttt taatagggtt ca	22
55	<210> 2338 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2338 gtcttggcgc gagtttta	18
	<210> 2339 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2339	

EP 1 770 171 A1

	ttgaagcctt ttgagcag	18
5	<210> 2340 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 2340 cattggttcg atcagtcag	19
15	<210> 2341 <211> 23 <212> DNA <213> synthetic construct	
	<400> 2341 gctttggtag gatataattag tgg	23
20	<210> 2342 <211> 23 <212> DNA <213> synthetic construct	
25	<400> 2342 tgattaaagg agttaagttg gtg	23
30	<210> 2343 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2343 tgtcaaaatt agcacagatt g	21
35	<210> 2344 <211> 23 <212> DNA <213> synthetic construct	
40	<400> 2344 agaaaaagtt gactacgaaa aag	23
45	<210> 2345 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2345 agataaataa cgcgcacaag	20
55	<210> 2346 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2346	

EP 1 770 171 A1

	tgatgctgag tacaaggatt t	21
5	<210> 2347 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 2347 ctttaaaatc agccttatcc a	21
15	<210> 2348 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2348 cggcagacaa gtcagtca	18
20	<210> 2349 <211> 25 <212> DNA <213> synthetic construct	
25	<400> 2349 tataatttct ctatcatcac caaaa	25
30	<210> 2350 <211> 23 <212> DNA <213> synthetic construct	
	<400> 2350 gtgatattat ccaaaccatt ctc	23
35	<210> 2351 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 2351 ttaaagcggc caaaaggc	19
45	<210> 2352 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2352 attggacttg tgcagcttc	20
55	<210> 2353 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2353	

EP 1 770 171 A1

	cctttgtcta ccttcattgg	20
5	<210> 2354 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 2354 gaaggcaatg aggagactta c	21
15	<210> 2355 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2355 ctactcggcc agacaagac	19
20	<210> 2356 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 2356 ttttattggg aggttttctt t	21
30	<210> 2357 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2357 aacaaatatg aaggcagca	19
35	<210> 2358 <211> 24 <212> DNA <213> synthetic construct	
40	<400> 2358 tgaaaaagtt attattatct gcaa	24
45	<210> 2359 <211> 21 <212> DNA <213> synthetic construct	
50	<400> 2359 atcagtggaa ataagagaag c	21
55	<210> 2360 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2360	

EP 1 770 171 A1

	agatgaaaag cttgctaatag a	21
5	<210> 2361 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2361 ttaatagaacg atttcttttt	20
15	<210> 2362 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2362 tggctgactc tcctgatg	18
20	<210> 2363 <211> 22 <212> DNA <213> synthetic construct	
25	<400> 2363 ttgcagatag gtattgatat gg	22
30	<210> 2364 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2364 atggataata agcgaacaca g	21
35	<210> 2365 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 2365 gacatactgc cacaacgac	19
45	<210> 2366 <211> 23 <212> DNA <213> synthetic construct	
50	<400> 2366 ttatatattgaa acaactgaagc aac	23
55	<210> 2367 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2367	

EP 1 770 171 A1

	ctcctgocca ttgttcta	18
5	<210> 2368 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2368 cgctattaac cttgctgaac	20
15	<210> 2369 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2369 cctttctcac tcaccacatc	20
20	<210> 2370 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 2370 ttgttgcaat acagccatc	19
30	<210> 2371 <211> 24 <212> DNA <213> synthetic construct	
	<400> 2371 cgataaatta caaaatacgt ttca	24
35	<210> 2372 <211> 22 <212> DNA <213> synthetic construct	
40	<400> 2372 aactttagcc ccactactat ca	22
45	<210> 2373 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 2373 aataccatta tcggggaag	19
55	<210> 2374 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2374	

EP 1 770 171 A1

	actccgccag accttaga	18
5	<210> 2375 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2375 atattgaacg ctgtgcttgt	20
15	<210> 2376 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2376 gcgattctat ggctgatg	18
20	<210> 2377 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 2377 ttatgcccggt ttctttgttag	20
30	<210> 2378 <211> 24 <212> DNA <213> synthetic construct	
	<400> 2378 tctaatactta attcctctgt tcct	24
35	<210> 2379 <211> 26 <212> DNA <213> synthetic construct	
40	<400> 2379 tgatatagac ttgattaaag gtgatt	26
45	<210> 2380 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2380 tccttactga gcttccatcc	20
55	<210> 2381 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2381	

EP 1 770 171 A1

	catcactatc tggctctatt tg	22
5	<210> 2382 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2382 tattgagcgc attgatttac	20
15	<210> 2383 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2383 ctatgcacat taggacgttg	20
20	<210> 2384 <211> 22 <212> DNA <213> synthetic construct	
25	<400> 2384 tcatatogct gtattacctt ga	22
30	<210> 2385 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2385 cttattagcc gcccttaac	19
35	<210> 2386 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2386 agcgcaaact cttcagatac	20
45	<210> 2387 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2387 tttaatcact cgtcctagcc	20
55	<210> 2388 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2388	

EP 1 770 171 A1

	aatattgggc aagctgcaa	19
5	<210> 2389 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 2389 atgttctgtc cctgtttgg	19
15	<210> 2390 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2390 aaatagtggg ggtgtgttcc	20
20	<210> 2391 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 2391 ttagcgtcctt tcccttctaa c	21
30	<210> 2392 <211> 23 <212> DNA <213> synthetic construct	
	<400> 2392 atgaaagcaa aaattgtact agg	23
35	<210> 2393 <211> 23 <212> DNA <213> synthetic construct	
40	<400> 2393 ttacttggtt atctagacgc tga	23
45	<210> 2394 <211> 21 <212> DNA <213> synthetic construct	
50	<400> 2394 tgcacttggtt tacgagagat t	21
55	<210> 2395 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2395	

EP 1 770 171 A1

	gaaatggcct ctactgtttg	20
5	<210> 2396 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2396 cagacaatgc gtttattttg	20
15	<210> 2397 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2397 tacgtaatgc ggcgattc	18
20	<210> 2398 <211> 23 <212> DNA <213> synthetic construct	
25	<400> 2398 aaacaataga tactttgcca ctt	23
30	<210> 2399 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2399 ttcgctgtta atatcccact	20
35	<210> 2400 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 2400 cttgccgtag ttgaaggtc	19
45	<210> 2401 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2401 tacattggca ttagcatcag	20
55	<210> 2402 <211> 24 <212> DNA <213> synthetic construct	
	<400> 2402	

EP 1 770 171 A1

	ttaagtaaag ctaaattccag aatg	24
5	<210> 2403 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2403 ataaatgatg tggcagggttg	20
15	<210> 2404 <211> 20 <212> DNA <213> synthetic construct	
20	<400> 2404 attattctcg ccagtgttcc	20
25	<210> 2405 <211> 19 <212> DNA <213> synthetic construct	
30	<400> 2405 cgatacgttt agcaccttg	19
35	<210> 2406 <211> 25 <212> DNA <213> synthetic construct	
40	<400> 2406 aatgtaaata aagacaatgc taacc	25
45	<210> 2407 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 2407 atcttgccat gcttcaac	18
55	<210> 2408 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2408 taaagcattc ggtattccac	20
	<210> 2409 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2409	

EP 1 770 171 A1

	agcgcattat tccattctac	20
5	<210> 2410 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 2410 aattggctac tcctcgatta c	21
15	<210> 2411 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2411 tgttgtgcta aagggtgtg	19
20	<210> 2412 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 2412 tgcggcttta gtatttgg	18
30	<210> 2413 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2413 gaagttgata acggettgg	19
35	<210> 2414 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 2414 tttctcacia gcagagcag	19
45	<210> 2415 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 2415 tcacgcgttt gtaaattgg	19
55	<210> 2416 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2416	

EP 1 770 171 A1

	atgccgtatt agatcacacc	20
5	<210> 2417 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2417 tttcccacat taccaaagtc	20
15	<210> 2418 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2418 aacaggcaca ttaacagagg	20
20	<210> 2419 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 2419 tttatcttca gggagcaatc	20
30	<210> 2420 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2420 gcacactgac ccaattaaag	20
35	<210> 2421 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2421 attaaacatg gtgcgatagg	20
45	<210> 2422 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 2422 tggcttgga acacaatc	18
55	<210> 2423 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2423	

EP 1 770 171 A1

	aattcgagtg atggacaaac	20
5	<210> 2424 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 2424 cgagcatgac actaataatg g	21
15	<210> 2425 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2425 ccgcttgacg atatagcat	19
20	<210> 2426 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 2426 tacgtacatc gccaccag	18
30	<210> 2427 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2427 aaaggaacag gactactttg ag	22
35	<210> 2428 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2428 gaaatacgca ttaggctctg	20
45	<210> 2429 <211> 21 <212> DNA <213> synthetic construct	
50	<400> 2429 gcgttatagc agtttaatcc a	21
55	<210> 2430 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2430	

EP 1 770 171 A1

	caagggtttcg ctaactaaag ag	22
5	<210> 2431 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2431 actttgattg atccgttttc	20
15	<210> 2432 <211> 23 <212> DNA <213> synthetic construct	
20	<400> 2432 ttctaaagggt ggtaatgttt ctt	23
25	<210> 2433 <211> 18 <212> DNA <213> synthetic construct	
30	<400> 2433 gcatatocctt ggcctaca	18
35	<210> 2434 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2434 gagccttggtt tatccctctt	20
45	<210> 2435 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 2435 tctatcccag cggttaaaa	19
55	<210> 2436 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2436 gctcatatca tcttccatcc	20
	<210> 2437 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2437	

EP 1 770 171 A1

	cctaagcaaa ttaacgaacc	20
5	<210> 2438 <211> 24 <212> DNA <213> synthetic construct	
10	<400> 2438 aagataggta cgcttttaat ttct	24
15	<210> 2439 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2439 agtaataatt tagctcgcca tt	22
20	<210> 2440 <211> 22 <212> DNA <213> synthetic construct	
25	<400> 2440 tcacagtcac cactaatctc ac	22
30	<210> 2441 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2441 acgaaacgcc ctctttac	18
35	<210> 2442 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 2442 acgtccctga aacactctc	19
45	<210> 2443 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2443 aaccaatgct gtaaccactc	20
55	<210> 2444 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2444	

EP 1 770 171 A1

	caggaacggg tttcttatac	19
5	<210> 2445 <211> 26 <212> DNA <213> synthetic construct	
10	<400> 2445 gcttataaaa gactagataa atgtcg	26
15	<210> 2446 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2446 atcacttcta tccaaaacga a	21
20	<210> 2447 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 2447 aagttgctaa agcgtcacat	20
30	<210> 2448 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2448 caacagtgat ttccatttga g	21
35	<210> 2449 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 2449 acgccttgaa cctttagac	19
45	<210> 2450 <211> 22 <212> DNA <213> synthetic construct	
50	<400> 2450 acacaatcca ttcacagtt ag	22
55	<210> 2451 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2451	

EP 1 770 171 A1

	tttcgggaag caattctat	19
5	<210> 2452 <211> 22 <212> DNA <213> synthetic construct	
10	<400> 2452 gacttaattg ctctcgtat tg	22
15	<210> 2453 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2453 cgcgtctaag gtaacatctc	20
20	<210> 2454 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 2454 attaagcgca aatgaaacag	20
30	<210> 2455 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2455 gatattgaga tgccaaggtg	20
35	<210> 2456 <211> 25 <212> DNA <213> synthetic construct	
40	<400> 2456 aaaaatgtag tgtttcagat tttag	25
45	<210> 2457 <211> 25 <212> DNA <213> synthetic construct	
50	<400> 2457 tcatagegat actttattat gtttt	25
55	<210> 2458 <211> 26 <212> DNA <213> synthetic construct	
	<400> 2458	

EP 1 770 171 A1

	taaattagct ttagttcttg gttag	26
5	<210> 2459 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 2459 gttttgagca gcacttgg	18
15	<210> 2460 <211> 19 <212> DNA <213> synthetic construct	
20	<400> 2460 tggcaccact attgctatg	19
25	<210> 2461 <211> 20 <212> DNA <213> synthetic construct	
30	<400> 2461 ttttggcgta tcgttatattt	20
35	<210> 2462 <211> 24 <212> DNA <213> synthetic construct	
40	<400> 2462 gatggtaatg ctgataataa caaa	24
45	<210> 2463 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 2463 actaacgcgg tgtaatgct	19
55	<210> 2464 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2464 caatctatgc ctgc aaa	18
	<210> 2465 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2465	

EP 1 770 171 A1

	agctgccggtt tctgttact	19
5	<210> 2466 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 2466 aacagtgggtt tagcccaag	19
15	<210> 2467 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2467 tggcaacaaa atctccac	18
20	<210> 2468 <211> 25 <212> DNA <213> synthetic construct	
25	<400> 2468 ttactaaatt ctacagcagt aatgg	25
30	<210> 2469 <211> 23 <212> DNA <213> synthetic construct	
	<400> 2469 attgggtattc tgctaataag gtg	23
35	<210> 2470 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 2470 ccggttcata ttgggtct	18
45	<210> 2471 <211> 24 <212> DNA <213> synthetic construct	
50	<400> 2471 tcagtcataa ttcaaataga aggt	24
55	<210> 2472 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2472	

EP 1 770 171 A1

	ccttctaacg ccacttacac	20
5	<210> 2473 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2473 atgcgataac caacactttc	20
15	<210> 2474 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2474 aacatatgag ggtgtggact	20
20	<210> 2475 <211> 23 <212> DNA <213> synthetic construct	
25	<400> 2475 gaagcaacgt aaattttctta cac	23
30	<210> 2476 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2476 ttgatatttgc gaatatagat gt	22
35	<210> 2477 <211> 21 <212> DNA <213> synthetic construct	
40	<400> 2477 caataatgaa aagcatcagg t	21
45	<210> 2478 <211> 23 <212> DNA <213> synthetic construct	
50	<400> 2478 tggagtatca gagctatattt gtt	23
55	<210> 2479 <211> 25 <212> DNA <213> synthetic construct	
	<400> 2479	

EP 1 770 171 A1

	agtcagccat aatttatcta gtttt	25
5	<210> 2480 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2480 ctatcagcca cctcttcttg	20
15	<210> 2481 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2481 ctaatgagca tcgttttagcc	20
20	<210> 2482 <211> 24 <212> DNA <213> synthetic construct	
25	<400> 2482 gcactagcta ctattctttc tgct	24
30	<210> 2483 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2483 aacggttgct ttacatcc	19
35	<210> 2484 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 2484 gaggtactgc atcgcaaa	18
45	<210> 2485 <211> 22 <212> DNA <213> synthetic construct	
50	<400> 2485 taccttctct aaatggtggt ga	22
55	<210> 2486 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2486	

EP 1 770 171 A1

	gcgcttgaac taacctctac	20
5	<210> 2487 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 2487 ggatgaccca ccataagc	18
15	<210> 2488 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2488 gctcagcaga aaccttgtc	19
20	<210> 2489 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 2489 ctggcgtaaa ctgccaata	19
30	<210> 2490 <211> 24 <212> DNA <213> synthetic construct	
	<400> 2490 gggatcttct ataactattc aacc	24
35	<210> 2491 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2491 taacctggaa cattctgacc	20
45	<210> 2492 <211> 22 <212> DNA <213> synthetic construct	
50	<400> 2492 tttctttgat ctacottggt tc	22
55	<210> 2493 <211> 23 <212> DNA <213> synthetic construct	
	<400> 2493	

EP 1 770 171 A1

	tgtaggctgc ttactacta tcc	23
5	<210> 2494 <211> 23 <212> DNA <213> synthetic construct	
10	<400> 2494 aagaacaagt agcaggtaaa gag	23
15	<210> 2495 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2495 cagttagctt tgcgatgtg	19
20	<210> 2496 <211> 25 <212> DNA <213> synthetic construct	
25	<400> 2496 ccaacttact tctatctacc tgatg	25
30	<210> 2497 <211> 23 <212> DNA <213> synthetic construct	
	<400> 2497 gttccagagt attggtattg ttc	23
35	<210> 2498 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2498 catcttattg tgggtccaag	20
45	<210> 2499 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2499 aagagcgaat acctgatgac	20
55	<210> 2500 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2500	

EP 1 770 171 A1

	cgtaagcctt atgttcgtg	19
5	<210> 2501 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 2501 taaacaatta gcgccactg	19
15	<210> 2502 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2502 aatcagaatc aacttcctaa gc	22
20	<210> 2503 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 2503 aacaccaata attgcgataa c	21
30	<210> 2504 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2504 gcgaagtaga agagaaagca	20
35	<210> 2505 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 2505 tttcagagtg gcggttatt	19
45	<210> 2506 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2506 agctgatggtt gttggttggtg	20
55	<210> 2507 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2507	

EP 1 770 171 A1

	ttgattgcac ctttctctg	19
5	<210> 2508 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 2508 ctaaatatgg cgcaggaac	19
15	<210> 2509 <211> 20 <212> DNA <213> synthetic construct	
20	<400> 2509 atagtgccaa tcatccaaag	20
25	<210> 2510 <211> 22 <212> DNA <213> synthetic construct	
30	<400> 2510 gttcataggc ttcacgtagt tc	22
35	<210> 2511 <211> 22 <212> DNA <213> synthetic construct	
40	<400> 2511 gtcaaatcca ttacttagca ca	22
45	<210> 2512 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2512 tggctgaaaa tgcgttaat	20
55	<210> 2513 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2513 aatgatttag ccgcttct	18
	<210> 2514 <211> 26 <212> DNA <213> synthetic construct	
	<400> 2514	

EP 1 770 171 A1

	gaaaggactt aaacttaact atccag	26
5	<210> 2515 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 2515 agggtcgtga atagaaacaa g	21
15	<210> 2516 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2516 actgacgctt atttgattga c	21
20	<210> 2517 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 2517 gtacgtttca agagtgatgc	20
30	<210> 2518 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2518 atggataata aaacgtatga a	21
35	<210> 2519 <211> 23 <212> DNA <213> synthetic construct	
40	<400> 2519 caattcttct atttcattctt gtg	23
45	<210> 2520 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 2520 tagctcgtgc atcaaagg	18
55	<210> 2521 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2521	

EP 1 770 171 A1

	aacctctgtc tccttctcaa c	21
5	<210> 2522 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2522 acactggctg aattaagtgc	20
15	<210> 2523 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2523 aacccgcttt aatactgtta tc	22
20	<210> 2524 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 2524 ttatctgcaa cactgatttc c	21
30	<210> 2525 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2525 tttccggcac agtaataaag	20
35	<210> 2526 <211> 25 <212> DNA <213> synthetic construct	
40	<400> 2526 gaaaattcac gtatgtcatg gaatc	25
45	<210> 2527 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2527 gcatttttcc cagatggctt	20
50	<210> 2528 <211> 19 <212> DNA <213> synthetic construct	
55	<400> 2528	

EP 1 770 171 A1

	acgttctgac tggaggaag	19
5	<210> 2529 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2529 ttcaatagag cgaaggattg	20
15	<210> 2530 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2530 tcacgctggt gttaggaag	19
20	<210> 2531 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 2531 aggctgggtg aagtaagtg	19
30	<210> 2532 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2532 cggaactgta taatcccttg	20
35	<210> 2533 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 2533 agtggcaaca gcaggtag	18
45	<210> 2534 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2534 cgtaggcatg atagaaatgg	20
55	<210> 2535 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2535	

EP 1 770 171 A1

	gtatcccgca gataaatcac	20
5	<210> 2536 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 2536 cacgatatgtt gtggcagac	19
15	<210> 2537 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2537 actcaaccca tcctaccc	18
20	<210> 2538 <211> 25 <212> DNA <213> synthetic construct	
25	<400> 2538 agcttttggtt ttatatattct attgg	25
30	<210> 2539 <211> 26 <212> DNA <213> synthetic construct	
	<400> 2539 tttagtctttt tgtcaattac actttt	26
35	<210> 2540 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 2540 ttgacgaagg cgtttatg	18
45	<210> 2541 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 2541 tgtgacttgg aacaaccag	19
55	<210> 2542 <211> 25 <212> DNA <213> synthetic construct	
	<400> 2542	

EP 1 770 171 A1

	tttaaagaat ggaaccaaga tcaaa	25
5	<210> 2543 <211> 23 <212> DNA <213> synthetic construct	
10	<400> 2543 tcgcctttta aatgtgtagc aaa	23
15	<210> 2544 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2544 gacaataaccg cgatgaata	19
20	<210> 2545 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 2545 ccggtggtat tgcctttta	19
30	<210> 2546 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2546 aatcactctc gtggettt	18
35	<210> 2547 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2547 gctaaattgg gatagtcctg	20
45	<210> 2548 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2548 tacagtcatt tcacgcaaac	20
55	<210> 2549 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2549	

EP 1 770 171 A1

	tcacgctctt catttagttc t	21
5	<210> 2550 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2550 agttgtagtt gtcgggtttg	20
15	<210> 2551 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2551 tgaagtcgct tttcctagag	20
20	<210> 2552 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 2552 gccataaagc aagttgaaat a	21
30	<210> 2553 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2553 atttaaaatg tctcgcaatt ct	22
35	<210> 2554 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 2554 catgcgtgta aatcatcgt	19
45	<210> 2555 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 2555 cccttgagcg gaagtatc	18
55	<210> 2556 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2556	

EP 1 770 171 A1

	tgaggaaggt agtaagggaa a	21
5	<210> 2557 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 2557 caaacatatt gggttgatag g	21
15	<210> 2558 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2558 tagcaataca atcgcacata c	21
20	<210> 2559 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 2559 tggatatatct tcaccaaacac c	21
30	<210> 2560 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2560 tgaagatggc agcaagag	18
35	<210> 2561 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2561 tcaaaccctc attaacatcc	20
45	<210> 2562 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2562 agagatgaat gcaggaacag	20
55	<210> 2563 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2563	

EP 1 770 171 A1

	accaccttgg aaatgtaatg	20
5	<210> 2564 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2564 caaacaagaa ttagccgaag	20
15	<210> 2565 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2565 cagaagcaac tgtgattgg	19
20	<210> 2566 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 2566 tacagatgca gacggtgtag	20
30	<210> 2567 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2567 ccctgtccat atccagtatc	20
35	<210> 2568 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 2568 gccggtgtat cactaaagg	19
45	<210> 2569 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2569 ctgttctagt cccattgctc	20
55	<210> 2570 <211> 28 <212> DNA <213> synthetic construct	
	<400> 2570	

EP 1 770 171 A1

	taataaaacg tatgaaatat catctgca	28
5	<210> 2571 <211> 28 <212> DNA <213> synthetic construct	
10	<400> 2571 tttcatcttg tgatagatct tctttttc	28
15	<210> 2572 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2572 cttggttagc gattcagtta g	21
20	<210> 2573 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 2573 caattcatcg tctggatagg	20
30	<210> 2574 <211> 25 <212> DNA <213> synthetic construct	
	<400> 2574 agcaagttga aatatctatg gctga	25
35	<210> 2575 <211> 25 <212> DNA <213> synthetic construct	
40	<400> 2575 tcatttaaaa tgcctcgcaa ttctt	25
45	<210> 2576 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2576 acatcgaact ggatctcaac	20
50	<210> 2577 <211> 21 <212> DNA <213> synthetic construct	
55	<400> 2577	

EP 1 770 171 A1

	tctcagcgat ctgtctatatt c	21
5	<210> 2578 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2578 tgtgcagtac cagtaagggtg	20
15	<210> 2579 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2579 ctccggttgg gtaaagtag	19
20	<210> 2580 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 2580 acagtgccag ttcttatcgt	20
30	<210> 2581 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2581 gaagccaacc tttatttcct	20
35	<210> 2582 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2582 ctcacccaaa tggagattta	20
45	<210> 2583 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2583 cttgcttttc agatgtttcc	20
50	<210> 2584 <211> 18 <212> DNA <213> synthetic construct	
55	<400> 2584	

EP 1 770 171 A1

	acaacatttc gccaaaca	18
5	<210> 2585 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 2585 ttgagctaaa gacattcctg t	21
15	<210> 2586 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2586 aatgatggct ttgaagtagt g	21
20	<210> 2587 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 2587 cctggttcctg cttctgtttc	20
30	<210> 2588 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2588 ccatcaggca acagaatg	18
35	<210> 2589 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2589 tgacgatctg gaacctttac	20
45	<210> 2590 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2590 cttactatcg gagctgggtca	20
55	<210> 2591 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2591	

EP 1 770 171 A1

	agggcacctc cctgatac	18
5	<210> 2592 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2592 tcactcatta accattgctg	20
15	<210> 2593 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2593 gtatgtcact caaggtgctg	20
20	<210> 2594 <211> 25 <212> DNA <213> synthetic construct	
25	<400> 2594 ttatctgttt tgttactgct tacac	25
30	<210> 2595 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2595 ttctaatacct cccaaagtcc	20
35	<210> 2596 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2596 tgacttcgga tgagttcaat	20
45	<210> 2597 <211> 21 <212> DNA <213> synthetic construct	
50	<400> 2597 gctgttaatt gttgttgctt t	21
55	<210> 2598 <211> 24 <212> DNA <213> synthetic construct	
	<400> 2598	

EP 1 770 171 A1

	aagtataatc agttcattgc tcac	24
5	<210> 2599 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2599 gtttcgacta cgacagttgg	20
15	<210> 2600 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2600 tgcttttagtt ttaagtgcac gt	22
20	<210> 2601 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 2601 tccttcatta cactcttggc	20
30	<210> 2602 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2602 tttgaaggaa ctgaagggtg	20
35	<210> 2603 <211> 21 <212> DNA <213> synthetic construct	
40	<400> 2603 ttctatttgc tgtgaatcct g	21
45	<210> 2604 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 2604 ggcttacggg atcaagac	18
55	<210> 2605 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2605	

EP 1 770 171 A1

	attggcctgg aagctcac	18
5	<210> 2606 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 2606 gcggtaagat ccttgagag	19
15	<210> 2607 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2607 agtggctctg caactttatc	20
20	<210> 2608 <211> 27 <212> DNA <213> synthetic construct	
25	<400> 2608 agttgaaaat gaaatatgta taagaac	27
30	<210> 2609 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2609 aactgcatta gcattttcttt c	21
35	<210> 2610 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 2610 tcattcgcac atgtaggc	18
45	<210> 2611 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 2611 gggatcgtca ccgtaatc	18
55	<210> 2612 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2612	

EP 1 770 171 A1

	gaccgatcac cctacgag	18
5	<210> 2613 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 2613 cgaaatgctt ctcaagatag g	21
15	<210> 2614 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2614 aagtttcatt gccagacg	18
20	<210> 2615 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 2615 tagactgcgt tgctcctc	18
30	<210> 2616 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2616 gccgaagtat cgactcaac	19
35	<210> 2617 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2617 agcactacat ttcgctcatc	20
45	<210> 2618 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2618 gcaggtcaca ttgatacaca	20
55	<210> 2619 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2619	

EP 1 770 171 A1

	catatcgcgga cctgaaag	18
5	<210> 2620 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2620 gctattggtg tttatggctc	20
15	<210> 2621 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2621 ctgattgctt aactgcttca	20
20	<210> 2622 <211> 22 <212> DNA <213> synthetic construct	
25	<400> 2622 gctaaatcga tctcatatcg tc	22
30	<210> 2623 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2623 ggcggtgtttg aaccatgta	19
35	<210> 2624 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 2624 ctcatTTggc tcaaaggTc	19
45	<210> 2625 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 2625 tgaataggac agcgaagg	18
55	<210> 2626 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2626	

EP 1 770 171 A1

	gagaatatca ccggaattga	20
5	<210> 2627 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2627 gctcgacata ctgttcttcc	20
15	<210> 2628 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2628 cctgaccaag tccaatcc	18
20	<210> 2629 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 2629 tagatcacgt aagcaccaag	20
30	<210> 2630 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2630 tgcgatgctc tatgagtg	18
35	<210> 2631 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 2631 gtaccttgcc tctcaaacc	19
45	<210> 2632 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2632 agatttgcca gaacatgaat	20
55	<210> 2633 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2633	

EP 1 770 171 A1

	tgttgcattt agtctttcca	20
5	<210> 2634 <211> 25 <212> DNA <213> synthetic construct	
10	<400> 2634 atatcaggaa agattggaaa tacgg	25
15	<210> 2635 <211> 23 <212> DNA <213> synthetic construct	
	<400> 2635 aaagaggtat agccattct gca	23
20	<210> 2636 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 2636 aagatacgga aggaatgtct c	21
30	<210> 2637 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2637 acaaagatgt tgetgtctcc	20
35	<210> 2638 <211> 25 <212> DNA <213> synthetic construct	
40	<400> 2638 acacagtcaa aactttatta ctcca	25
45	<210> 2639 <211> 24 <212> DNA <213> synthetic construct	
50	<400> 2639 caacaagttt attttctgta gttt	24
55	<210> 2640 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2640	

EP 1 770 171 A1

	cgtttaccaa aggagaaggt	20
5	<210> 2641 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2641 tgtttagcca attatcagca	20
15	<210> 2642 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2642 gtgattacag aatgaaagc ag	22
20	<210> 2643 <211> 27 <212> DNA <213> synthetic construct	
25	<400> 2643 agatatatta ccttatcagt attgtca	27
30	<210> 2644 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2644 gacagatttt cgatccctta	20
35	<210> 2645 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2645 cctttttggt ttgatgcact	20
45	<210> 2646 <211> 30 <212> DNA <213> synthetic construct	
50	<400> 2646 gatataggat acaaaataga agttgattgg	30
55	<210> 2647 <211> 26 <212> DNA <213> synthetic construct	
	<400> 2647	

EP 1 770 171 A1

	ggctcttttttc tgttaattca taaccg	26
5	<210> 2648 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 2648 catttaacga cgaaactgg	19
15	<210> 2649 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2649 aattgtttac tttggcgtgt	20
20	<210> 2650 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 2650 ccagaaaaac cctaaagaca	20
30	<210> 2651 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2651 aaagaacacg atattcacgg	20
35	<210> 2652 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2652 gtccgaatcc tatgaaaatg	20
45	<210> 2653 <211> 22 <212> DNA <213> synthetic construct	
50	<400> 2653 gcagctgatt tattgtatct tg	22
55	<210> 2654 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2654	

EP 1 770 171 A1

	cattagcagg aggatgtttc	20
5	<210> 2655 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 2655 tgaaccacgt tgatattgg	19
15	<210> 2656 <211> 26 <212> DNA <213> synthetic construct	
20	<400> 2656 gcatataaat atcaaaacca tacaag	26
25	<210> 2657 <211> 18 <212> DNA <213> synthetic construct	
30	<400> 2657 tttcaatgcc atcgtttc	18
35	<210> 2658 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2658 ggtcttgtct atggettcac	20
45	<210> 2659 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2659 cattccttct tgcatttctc	20
55	<210> 2660 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2660 gttgagaatg ggagagactg	20
	<210> 2661 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2661	

EP 1 770 171 A1

	aacgtcgcga ttctaggt	18
5	<210> 2662 <211> 24 <212> DNA <213> synthetic construct	
10	<400> 2662 actaagaaaa tcgtagctat ttgg	24
15	<210> 2663 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2663 acttcctttc tcttgcgata	20
20	<210> 2664 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 2664 caattacctt ggcacttacc	20
30	<210> 2665 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2665 cccttttcta cgcactaaat	20
35	<210> 2666 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 2666 tggaatgggt agcttcttc	19
45	<210> 2667 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 2667 gggaaacaca agacagacc	19
55	<210> 2668 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2668	

EP 1 770 171 A1

	gataaccatc acaaacagaa tg	22
5	<210> 2669 <211> 21 <212> DNA <213> synthetic construct	
10	<400> 2669 ttatttgaac caacaaacga c	21
15	<210> 2670 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2670 agaaaattgg gatagaaaag aa	22
20	<210> 2671 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 2671 ctgcaaggca actggtat	18
30	<210> 2672 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2672 ttagcaactct atgcgacga	19
35	<210> 2673 <211> 21 <212> DNA <213> synthetic construct	
40	<400> 2673 aatacaccaa gaaatgcaag a	21
45	<210> 2674 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 2674 cacctgcgag tacaaaactg	19
55	<210> 2675 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2675	

EP 1 770 171 A1

	cccacaaaga actccaatc	19
5	<210> 2676 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2676 gacaaaggta caacgaggac	20
15	<210> 2677 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2677 gcacttccat gataaagagg	20
20	<210> 2678 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 2678 tcttatggca gtacgcaac	19
30	<210> 2679 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2679 ccagtttccc gttttctaata	20
35	<210> 2680 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 2680 gtgcggtatt gggaaaca	18
45	<210> 2681 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 2681 cggccgttat cttgtaaa	18
55	<210> 2682 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2682	

EP 1 770 171 A1

	aagtgtgggc attactgttt	20
5	<210> 2683 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 2683 ccttgcttca tctctcca	18
15	<210> 2684 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2684 acgagaatta tacggttttc a	21
20	<210> 2685 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 2685 atcaatggtg tcgttcattt	20
30	<210> 2686 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2686 gaattctact tgtcgaggat g	21
35	<210> 2687 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 2687 tctgcctctg catcaaac	18
45	<210> 2688 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 2688 aatgatccga gggaaact	18
55	<210> 2689 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2689	

EP 1 770 171 A1

	tttgtagcg ttatcgttg t	21
5	<210> 2690 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2690 acatgagttg gaggaacac	20
15	<210> 2691 <211> 20 <212> DNA <213> synthetic construct	
20	<400> 2691 tacgatggca agtcctaac	20
25	<210> 2692 <211> 19 <212> DNA <213> synthetic construct	
30	<400> 2692 ggcagcaaag accttaaac	19
35	<210> 2693 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 2693 tcattgggtc tcctcctg	18
45	<210> 2694 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2694 gaagatggaa caattcaagg	20
55	<210> 2695 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2695 tttccacag taaaggatac a	21
	<210> 2696 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2696	

EP 1 770 171 A1

	tacagtctat ccgggcatt	19
5	<210> 2697 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2697 tgttgtcggg atcaattact	20
15	<210> 2698 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2698 tgggataact tcacaggaaa	20
20	<210> 2699 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 2699 ggtatggctc atcaatcaa	19
30	<210> 2700 <211> 27 <212> DNA <213> synthetic construct	
	<400> 2700 atacttaggt tatgactacg ttaatga	27
35	<210> 2701 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 2701 aaatgaacc gtatttcca	19
45	<210> 2702 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2702 gtgcgttcat tatttcgttc	20
55	<210> 2703 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2703	

EP 1 770 171 A1

	gccatctata aacctcgttg	20
5	<210> 2704 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2704 ttgtctggta tcccctatgt	20
15	<210> 2705 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2705 aaaagatcaa cacgagcaag	20
20	<210> 2706 <211> 25 <212> DNA <213> synthetic construct	
25	<400> 2706 aggattgcta gctttatatt tagtg	25
30	<210> 2707 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2707 atttattctt aaatgggtac gg	22
35	<210> 2708 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2708 aagctgcctt atgtaggttg	20
45	<210> 2709 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 2709 agcaccgaca gtcaaaga	18
55	<210> 2710 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2710	

EP 1 770 171 A1

	gacatacgag ttggctgaa	19
5	<210> 2711 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 2711 ctattggggg atgggttcgt	19
15	<210> 2712 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2712 cctttgaagc tggactgac	20
20	<210> 2713 <211> 19 <212> DNA <213> synthetic construct	
25	<400> 2713 ctgtgaaccg tcttgattg	19
30	<210> 2714 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2714 tgtcgaagtt tttcattgat ag	22
35	<210> 2715 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 2715 aaggtcacgg tgatgggc	18
45	<210> 2716 <211> 23 <212> DNA <213> synthetic construct	
50	<400> 2716 caatgggttac aggttggtgga aga	23
55	<210> 2717 <211> 24 <212> DNA <213> synthetic construct	
	<400> 2717	

EP 1 770 171 A1

	gcccactaca gattcttcag ctac	24
5	<210> 2718 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 2718 ctcttagacg ccctgtcc	18
15	<210> 2719 <211> 19 <212> DNA <213> synthetic construct	
20	<400> 2719 gtttccgaga aggtgattg	19
25	<210> 2720 <211> 19 <212> DNA <213> synthetic construct	
30	<400> 2720 catcgtaac ataacctcg	19
35	<210> 2721 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 2721 aattcttgcg gtttcttc	19
45	<210> 2722 <211> 26 <212> DNA <213> synthetic construct	
50	<400> 2722 gaggtgtaat tatgattcag actatt	26
55	<210> 2723 <211> 24 <212> DNA <213> synthetic construct	
	<400> 2723 tcgtaccaac taatttagac aatc	24
	<210> 2724 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2724	

EP 1 770 171 A1

	ctcgaccgga tctacgtc	18
5	<210> 2725 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 2725 gtcttcacct cgacaccc	18
15	<210> 2726 <211> 25 <212> DNA <213> synthetic construct	
20	<400> 2726 tgatcatcata gctcttaaca taatc	25
25	<210> 2727 <211> 18 <212> DNA <213> synthetic construct	
30	<400> 2727 ctaaacgccca agcacaag	18
35	<210> 2728 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 2728 gaccaggagt tgggtggtt	18
45	<210> 2729 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 2729 aacagctgac aaatcaacg	19
55	<210> 2730 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2730 ctggctctgt tagtgctttc	20
	<210> 2731 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2731	

EP 1 770 171 A1

	ctgttaccgt tgatttacct g	21
5	<210> 2732 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2732 cctgaaatcc actactgacc	20
15	<210> 2733 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2733 ccaacgacag ttccactc	18
20	<210> 2734 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 2734 gaaatgatat tgacgggact	20
30	<210> 2735 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2735 tcaacacaag gacaggttg	19
35	<210> 2736 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 2736 aaggctggct ttttcttg	18
45	<210> 2737 <211> 21 <212> DNA <213> synthetic construct	
50	<400> 2737 aattatgagc cccataccta c	21
55	<210> 2738 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2738	

EP 1 770 171 A1

	attagaaatt gcgactggtg	20
5	<210> 2739 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2739 agcgtgtcat atccttcac	20
15	<210> 2740 <211> 27 <212> DNA <213> synthetic construct	
	<400> 2740 ttggatagtt caacaaaaac attaaca	27
20	<210> 2741 <211> 27 <212> DNA <213> synthetic construct	
25	<400> 2741 catttttatac ttctgttacc actgggt	27
30	<210> 2742 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2742 tgagcagcgt aaccagac	18
35	<210> 2743 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 2743 agtcatccac gttcctttc	19
45	<210> 2744 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2744 atgaaaaacc ctcataaaaa	20
55	<210> 2745 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2745	

EP 1 770 171 A1

	gggaaaaaga ccaaaggtaa	20
5	<210> 2746 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2746 agaacatatc cgcaacaag	20
15	<210> 2747 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2747 tgatgtaaac aaaatcggtc c	21
20	<210> 2748 <211> 21 <212> DNA <213> synthetic construct	
25	<400> 2748 aaccgtttat acgttggtga g	21
30	<210> 2749 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2749 gattaacgcc tgcacac	18
35	<210> 2750 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 2750 atgttctcgc tgcagttc	18
45	<210> 2751 <211> 23 <212> DNA <213> synthetic construct	
50	<400> 2751 accaaaaactt tattttcacc atc	23
55	<210> 2752 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2752	

EP 1 770 171 A1

	ataaagcaat gaagcctaaa gt	22
5	<210> 2753 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2753 tttagcatca aggaaccatc	20
15	<210> 2754 <211> 20 <212> DNA <213> synthetic construct	
20	<400> 2754 ggtagcttgt tgctgctttt	20
25	<210> 2755 <211> 19 <212> DNA <213> synthetic construct	
30	<400> 2755 cgtaatcgca atcgaaata	19
35	<210> 2756 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 2756 gaactacccc gtgaatcc	18
45	<210> 2757 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 2757 cactggtcga ggagatgc	18
55	<210> 2758 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2758 gcaaggaccg ttctatca	18
	<210> 2759 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2759	

EP 1 770 171 A1

	cttcaatgac gtgtaaacca	20
5	<210> 2760 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2760 tacgatgaca ccagtctttg	20
15	<210> 2761 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2761 atcgacaaaa cgtacaggat	20
20	<210> 2762 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 2762 tagcaacctc cctttgatac	20
30	<210> 2763 <211> 24 <212> DNA <213> synthetic construct	
	<400> 2763 acaaaaagata tgtgtgaagt tacc	24
35	<210> 2764 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 2764 gcgtagaacg tggacttg	18
45	<210> 2765 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2765 tcataaatgg accgaatacc	20
55	<210> 2766 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2766	

EP 1 770 171 A1

	atggcttggt ctgctgct	18
5	<210> 2767 <211> 26 <212> DNA <213> synthetic construct	
10	<400> 2767 ttattttcaag ttagtgaaat cagttt	26
15	<210> 2768 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2768 ctaagatgtc gtcgcaagat	20
20	<210> 2769 <211> 22 <212> DNA <213> synthetic construct	
25	<400> 2769 tttcttcatg ttcatatgga tt	22
30	<210> 2770 <211> 25 <212> DNA <213> synthetic construct	
	<400> 2770 gctgaattat ctaaattacc aagag	25
35	<210> 2771 <211> 19 <212> DNA <213> synthetic construct	
40	<400> 2771 tgcagtaaca agcatccac	19
45	<210> 2772 <211> 22 <212> DNA <213> synthetic construct	
50	<400> 2772 ggtggtaaatt taagagattt gg	22
55	<210> 2773 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2773	

EP 1 770 171 A1

	aggattttctg gtttgaaagg	20
5	<210> 2774 <211> 20 <212> DNA <213> synthetic construct	
10	<400> 2774 tcatggatta ttgttcgtg	20
15	<210> 2775 <211> 21 <212> DNA <213> synthetic construct	
20	<400> 2775 ccatacttt gagcaactgt g	21
25	<210> 2776 <211> 19 <212> DNA <213> synthetic construct	
30	<400> 2776 aaacgggtcca gagttgaag	19
35	<210> 2777 <211> 20 <212> DNA <213> synthetic construct	
40	<400> 2777 ctctcaaaga accagacacc	20
45	<210> 2778 <211> 21 <212> DNA <213> synthetic construct	
50	<400> 2778 tgttattggt tatggtgttg g	21
55	<210> 2779 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2779 cggtgatttc taatggtctc	20
	<210> 2780 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2780	

EP 1 770 171 A1

	attccttggt ttggttctg	19
5	<210> 2781 <211> 22 <212> DNA <213> synthetic construct	
10	<400> 2781 gtctccaata atgaggtaaa gg	22
15	<210> 2782 <211> 20 <212> DNA <213> synthetic construct	
20	<400> 2782 gctctttgct tcaattatcc	20
25	<210> 2783 <211> 20 <212> DNA <213> synthetic construct	
30	<400> 2783 ataaaccacc caagaacaac	20
35	<210> 2784 <211> 25 <212> DNA <213> synthetic construct	
40	<400> 2784 atccaagttg aaagagataa attga	25
45	<210> 2785 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2785 ttccccttca agtttaccta	20
55	<210> 2786 <211> 16 <212> DNA <213> synthetic construct	
	<400> 2786 agaggcccggt ttgaag	16
	<210> 2787 <211> 16 <212> DNA <213> synthetic construct	
	<400> 2787	

EP 1 770 171 A1

	gctcaagggg caaatg	16
5	<210> 2788 <211> 17 <212> DNA <213> synthetic construct	
10	<400> 2788 tcggagtcaa cggatth	17
15	<210> 2789 <211> 16 <212> DNA <213> synthetic construct	
	<400> 2789 ccacgacgta ctcagc	16
20	<210> 2790 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 2790 atggatgatg atatcgccgc	20
30	<210> 2791 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2791 gtgtggtgcc agattttct	19
35	<210> 2792 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 2792 gccaaattgc caaaactc	18
45	<210> 2793 <211> 16 <212> DNA <213> synthetic construct	
50	<400> 2793 cacaacacga agaccg	16
55	<210> 2794 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2794	

EP 1 770 171 A1

	caccctggat ttgcatac	18
5	<210> 2795 <211> 17 <212> DNA <213> synthetic construct	
10	<400> 2795 acatctgatac cgttcct	17
15	<210> 2796 <211> 25 <212> DNA <213> synthetic construct	
20	<400> 2796 atccaagttg aaagagataa attga	25
25	<210> 2797 <211> 20 <212> DNA <213> synthetic construct	
30	<400> 2797 ttcccccttca agtttaccta	20
35	<210> 2798 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 2798 caggcctaac acatgcaa	18
45	<210> 2799 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 2799 gaccgtgtct cagttccag	19
55	<210> 2800 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2800 aggataggta ggagccgtag	20
	<210> 2801 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2801	

EP 1 770 171 A1

	agatgctttc agcgtttatac	20
5	<210> 2802 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 2802 gcgtgagtga aagaagggtt	19
15	<210> 2803 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2803 cagtttccaa agcgtacatt	20
20	<210> 2804 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 2804 ccacactggg actgagac	18
30	<210> 2805 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2805 gctcgggacc tacgtatta	19
35	<210> 2806 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 2806 cacggcccag actcctac	18
45	<210> 2807 <211> 19 <212> DNA <213> synthetic construct	
50	<400> 2807 cccaataaat ccggacaac	19
55	<210> 2808 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2808	

EP 1 770 171 A1

	gtgcattagc tagttggtga g	21
5	<210> 2809 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 2809 ataccgtcaa gggatgaac	19
15	<210> 2810 <211> 19 <212> DNA <213> synthetic construct	
	<400> 2810 tgcctataca tgcaagtcg	19
20	<210> 2811 <211> 18 <212> DNA <213> synthetic construct	
25	<400> 2811 ctatgcatcg tggccttg	18
30	<210> 2812 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2812 ggcgtgecta atacatgc	18
35	<210> 2813 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 2813 ctatgcatcg tcgccttg	18
45	<210> 2814 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 2814 caggcctaac acatgcaa	18
55	<210> 2815 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2815	

EP 1 770 171 A1

	atcccatctg ggcacatc	18
5	<210> 2816 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 2816 acacgggtcca gactcctac	19
15	<210> 2817 <211> 20 <212> DNA <213> synthetic construct	
	<400> 2817 aattaaacca catgctccac	20
20	<210> 2818 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 2818 gcattagcta gttgggtgagg	20
30	<210> 2819 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2819 gtcaggggac gttcagtt	18
35	<210> 2820 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 2820 cgtgcctaata acatgcaa	18
45	<210> 2821 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2821 cgatcacccct ctcaggtc	18
50	<210> 2822 <211> 23 <212> DNA <213> synthetic construct	
55	<400> 2822	

EP 1 770 171 A1

	acacgtgggt aacctaccta taa	23
5	<210> 2823 <211> 18 <212> DNA <213> synthetic construct	
10	<400> 2823 ccgatcaccc tctcaggt	18
15	<210> 2824 <211> 22 <212> DNA <213> synthetic construct	
20	<400> 2824 cctttaggtg tattggtagg ag	22
25	<210> 2825 <211> 19 <212> DNA <213> synthetic construct	
30	<400> 2825 atcgtctgca ttccttagc	19
35	<210> 2826 <211> 18 <212> DNA <213> synthetic construct	
40	<400> 2826 caggcctaac acatgcaa	18
45	<210> 2827 <211> 18 <212> DNA <213> synthetic construct	
50	<400> 2827 agtcccagtg tggctgat	18
55	<210> 2828 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2828 tggttgatca tggctcag	18
	<210> 2829 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2829	

EP 1 770 171 A1

	aagagcccct gctttggt	18
5	<210> 2830 <211> 19 <212> DNA <213> synthetic construct	
10	<400> 2830 tctctgatgt tagcgggcg	19
15	<210> 2831 <211> 17 <212> DNA <213> synthetic construct	
	<400> 2831 tcaggctttc gccatt	17
20	<210> 2832 <211> 20 <212> DNA <213> synthetic construct	
25	<400> 2832 ctaacacatg caagtogaac	20
30	<210> 2833 <211> 18 <212> DNA <213> synthetic construct	
	<400> 2833 cacatccgat ggcaagag	18
35	<210> 2834 <211> 17 <212> DNA <213> synthetic construct	
40	<400> 2834 ataggtcggc ggttcat	17
45	<210> 2835 <211> 20 <212> DNA <213> synthetic construct	
50	<400> 2835 cccgagtatc tggaagacag	20
55	<210> 2836 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2836	

EP 1 770 171 A1

	ctaaaattgg tgaaggtgca gc	22
5	<210> 2837 <211> 22 <212> DNA <213> synthetic construct	
10	<400> 2837 atatggtggt tcagattctg cc	22
15	<210> 2838 <211> 21 <212> DNA <213> synthetic construct	
	<400> 2838 ccttagttat ctcggtgcca g	21
20	<210> 2839 <211> 22 <212> DNA <213> synthetic construct	
25	<400> 2839 ggaagccaca ctgctacaca gg	22
30	<210> 2840 <211> 22 <212> DNA <213> synthetic construct	
	<400> 2840 ccaccggttt aacttggaat cc	22
35	<210> 2841 <211> 22 <212> DNA <213> synthetic construct	
40	<400> 2841 aattgatggt acacgaccag tg	22
45		
50		
55		

Claims

1. A DNA microarray for direct identification and characterisation of microorganisms in a sample or clinical specimen, wherein the microarray comprises gene probes being derived from DNA sequences or partial DNA sequences of the microorganisms to be identified or DNA sequences complementary or homologous thereto, and having a length of at least 100 nucleotides (nt).

2. The DNA microarray of claim 1, wherein

- (i) the length of the gene probes is from 100 to 1000 nt, preferably from 200 to 800 nt; and/or
- (ii) the gene probes are specific for a specific microbial species or group of microorganisms to be identified and preferably are DNA sequences selected from the groups consisting of (a) species specific gene probes, (b) virulence gene probes and (c) resistance gene probes; and/or
- (iii) the microorganisms to be detected are microorganisms which cause bacteremia, fungemia or sepsis and include bacteria and fungi, preferably the microorganisms are selected from the group consisting of *Candida albicans*, *Enterococcus faecalis*, *Enterococcus faecium*, *Escherichia coli*, *Klebsiella oxytoca*, *Klebsiella pneumoniae*, *Proteus mirabilis*, *Proteus vulgaris*, *Enterobacter cloacae*, *Pseudomonas aeruginosa*, *Stenotrophomonas maltophilia*, *Acinetobacter baumannii*, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Staphylococcus haemolyticus*, *Staphylococcus lugdunensis*, *Staphylococcus warneri*, *Streptococcus agalactiae*, *Streptococcus bovis*, *Streptococcus dysgalactiae*, *Streptococcus mitis*, *Streptococcus mutans*, *Streptococcus pneumoniae*, *Streptococcus pyogenes*, most preferably are *S. aureus*, *E. coli* and/or *P. aeruginosa*; and/or
- (iv) the sample is selected from whole blood, serum, urine, saliva, liquor, sputum, punctate, stool, pus, wound fluid, positive blood cultures, preferably is positive blood cultures; and/or
- (v) the array further comprises DNA sequences selected from the group (d) consisting of control gene probes coding for negative controls and positive controls.

3. The DNA microarray of claim 2, which is suitable for identification of bacteremia, fungemia or sepsis and wherein the set of gene probes preferably comprises gene probes selected from

(a) species specific gene probes for

- (i) *Staphylococcus aureus* including gene probes derived from *cataSaur*, *clfA*, *clfB*, *coa*, *l-clpC*, *l-clpP*, *l-ctaA*, *l-ctsR*, *l-dltA*, *l-dltB*, *l-dltC*, *l-dnaK*, *l-eltK*, *l-femD*, *l-glnA*, *l-glnR*, *l-grlA*, *l-grlB*, *l-groEL*, *l-groES*, *l-hemA*, *l-hemE*, *l-hemH*, *l-hemL*, *l-hemY*, *l-lepA*, *l-lrgA*, *l-lrgB*, *l-lytM*, *l-menB*, *l-menD*, *l-menE*, *l-menF*, *l-mreB*, *l-mreR*, *l-mutL*, *l-mutS*, *l-NAG*, *l-pbg*, *l-pbpF*, *l-pdhB*, *l-pdhC*, *l-rsbU*, *l-rsbV*, *l-rsbW*, *l-sgp*, *l-sirR*, *l-sodA*, *l-sodB*, *l-sstA*, *l-sstB*, *l-sstC*, *l-sstD*, *l-trx*, *l-yhiN*, *epiP-bsaP*, *geh*, *gyrA*, *gyrB*, *hemB*, *hemC*, *hemD*, *hemN*, *hsdS*, *hsdS*, *lip*, *menC*, *nuc*, *pdhD*, *rpoB*, *SAV0431*, *SAV0439*, *SAV0440*, *SAV0441*, *sigB*, *spa*, *sstC*, *tag*, *tyrA*, *l-aroC*, *l-aroA*, *l-cna*, *l-ebpS*, *l-eno*, *l-fbpA*, *l-fib*, *l-fnbB*, *l-srtA*, *l-stpC*, *l-fnbA*, *l-spa*, *l-aroE*, *l-aroF*, *l-aroG*, *l-aspx23*, *l-atl*;
- (ii) *Escherichia coli* including gene probes derived from *b1169*, *envZ*, *fliCb*, *nfrB*, *nlpA*, *pilAe*, *yach*, *yagX*, *ycdS*, *yciQ*, *ymcA*;
- (iii) *Staphylococcus epidermidis* including gene probes derived from *ardeSE0106*, *ardeSE0107*, *aroISE0105*, *atlE*, *agrB*, *agrC*, *alphSE1368*, *gad*, *glucSE1191*, *hsp10*, *icaA*, *icaB*, *mvaSSepid*, *nitreSE1972*, *nitreSE1974*, *nitreSE1975*, *oiamtSE1209*, *ORFISepid*, *ORF3bSepid*, *qacR*, *sin*, *ureSE1861*, *ureSE1863*, *ureSE1864*, *ureSE1865*, *ureSE1867*;
- (iv) *Staphylococcus haemolyticus* including gene probes derived from *folQShaemolyt*, *m vaCShaem olyticus*, *mvaDShaemolyt*, *mvaK1Shaemolyticus*, *m vaSShaem olyticus*, *RNApolsigm*;
- (v) *Staphylococcus lugdunensis* including gene probes derived from *agrB2Stalugd*, *agrC2Stalugd*, *agrC-Stalugd*, *slam Stalugd*;
- (vi) *Staphylococcus warneri* including gene probes derived from *msrw1Stwar*, *nukMStwar*, *proDStwar*, *proMStwar*, *sigrpoStwar*, *tnpStwar*;
- (vii) *Candida albicans* including gene probes derived from *ARG56*, *ASL43f*, *BGL2*, *CACHS3*, *CCT8*, *CDC37*, *CEF3*, *CHS1*, *CHS2*, *CHS4*, *CHS5*, *CHT1*, *CHT2*, *CHT4*, *CSA1*, *5triphosphatase*, *AAF1*, *ADH1*, *ALS1*, *ALS7*, *EDT1*, *ELF*, *ESS1*, *FAL1*, *GAP1*, *GNA1*, *GSC1*, *GSL1*, *HIS1*, *HTS1*, *HWP1*, *HYR1*, *INT1a*, *KRE15f*, *KRE6*, *KRE9*, *MIG1*, *MLS1*, *MP65*, *NDE1*, *PFK2*, *PHR1*, *PHR2*, *PHR3*, *PRA1*, *PRS1*, *RBT1*, *RBT4*, *RHO1*, *RNR1*, *RPB7*, *RPL13*, *RVS167*, *SHA3*, *SKN1*, *SRB1*, *TCA1*, *TRP1*, *YAE1*, *YRB1*, *YST1exon2*;
- (viii) *Enterococcus faecalis* including gene probes derived from *arcA*, *arcC*, *bkdA*, *cad*, *camE1*, *csrA*, *dacA*,

dfc, *dhoD1a*, *ABC-eltA*, *agrBfs*, *agrCfs*, *dnaE*, *ebsA*, *ebsB*, *eep*, *efaR*, *gls24_glsB*, *gph*, *gyrAEf*, *metEf*, *mntHCb2*, *mob2*, *mvaD*, *mvaE*, *parC*, *pcfG*, *phoZ*, *polC*, *ptb*, *recS1*, *rpoN*, *tms*, *tyrDC*, *tyrS*;

(ix) *Enterococcus faecium* including gene probes derived from *bglB*, *bglR*, *bglS*, *efmA*, *efmB*, *efmC*, *mreC*, *mreD*, *mvaDEfaecium*, *mvaEEfaecium*, *mvaK1Efaecium*, *mvaK2Efaecium*, *mvaSEfaecium*, *orf3_4Efaeciumb*, *orf6_7Efaecium*, *orf7_8Efaecium*, *orf9_10Efaecium*;

(x) *Klebsiella pneumonia* including gene probes derived from *atsA*, *atsB*, *budC*, *citA*, *citW*, *citX*, *dalD*, *dalk*, *dalT*, *acoA*, *acoB*, *acoC*, *ahlK*, *fimK*, *glfKPN2*, *ltrA*, *mdcC*, *mdcF*, *mdcH*, *mrkA*, *mtrK*, *nifF*, *nifK*, *nifN*, *tyrP*, *ureA*, *wbbO*, *wza*, *wzb*, *wzmKPN2*, *wztKPN2*, *yojH*, *liac*;

(xi) *Klebsiella oxytoca* including gene probes derived from *cymA*, *cymD*, *cymE*, *cymH*, *cymI*, *cymJ*, *ddrA*, *fdt-1*, *fdt-2*, *fdt-3*, *gatY*, *hydH*, *masA*, *nasA*, *nasE*, *nasF*, *pehX*, *pelX*, *tagH*, *tagK*, *tagT*;

(xii) *Pseudomonas aeruginosa* including gene probes derived from *glpR*, *lasRb*, *OrfX*, *pa0260*, *pa0572*, *pa0625*, *pa0636*, *pa1046*, *pa1069*, *pa1846*, *pa3866*, *pa4082*, *pilAp*, *PilAp2*, *pilC*, *PstP*, *purK*, *uvrDII*, *vsml*, *vsmR*, *xcpX*;

(xiii) *Streptococcus pneumoniae* including gene probes derived from *cap1EStrepneu*, *cap1FStrepneu*, *cap1GStrepneu*, *cap3AStrepneu*, *cap3BStrepneu*, *celAStrepneu*, *celBStrepneu*, *cglAStrepneu*, *cglBStrepneu*, *cglCStrepneu*, *cglDStrepneu*, *cinA*, *cps14EStrepneu*, *cps14FStrepneu*, *cps14GStrepneu*, *cps14H-Strepneu*, *cps19aHStrepneu*, *cps19aIStrepneu*, *cps19aKStrepneu*, *cps19f-GStrepneu*, *cps23fGStrepneu*, *dexB*, *dinF*, *1760Strepneu*, *acyPStrepneu*, *endAStrepneu*, *exoAStrepneu*, *exp72*, *fnlAStrepneu*, *fnlBStrepneu*, *fnlCStrepneu*, *gct18Strepneu*, *hexB1*, *htfsHstrepneu*, *immunofrag1Strepneu*, *immunofrag-2Strepneu*, *immunofrag3Strepneu*, *kdtBStrepneu*, *lysAStrepneu*, *pcpBStrepneu*, *pflCStrepneu*, *plpA*, *prtA1Strepneu*, *pspC1Strepneu*, *pspC2*, *purRStrepneu*, *pyrDAStrepneu*, *SP0828Strepneu*, *SP0830Strepneu*, *SP0833Strepneu*, *SP0837_38-Strepneu*, *SP0839Strepneu*, *ugdStrepneu*, *uncC*, *vicXStrepneu*, *wchA6bStrepneu*, *wci4Strepneu*, *wciK4Strepneu*, *wciL4Strepneu*, *wciN6bStrepneu*, *wciO6b-Strepneu*, *wciP6bStrepneu*, *wciY18Strepneu*, *wzdbStrepneu*, *wze6b-Strepneu*, *wzy18Strepneu*, *wzy4Strepneu*, *wzy6bStrepneu*, *xpt*;

(xiv) *Streptococcus agalactiae* including gene probes derived from *cpsA1Strgal*, *cpsB1Strgal*, *cpsC1Strgal*, *cpsD1Strgal*, *cpsE1Strgal*, *cpsG1Strgal*, *cpsIStrgal*, *cpsJStrgal*, *cpsKStrgal*, *cpsMStrgal*, *cpsYStrgal*, *cylBStraga*, *cylEStraga*, *cylFStraga*, *cylHStraga*, *cylIStraga*, *cylJStraga*, *cylKStraga*, *0487Straga*, *0488Straga*, *0493Straga*, *0495Straga*, *0498Straga*, *0500Straga*, *0502Straga*, *0504Straga*, *folDStraga*, *neuA1Strgal*, *neuB1Strgal*, *neuC1Strgal*, *neuD1Strgal*, *recNStraga*, *ileSStraga*;

(xv) *Streptococcus pyogenes* including gene probes derived from *cyclStrpyog*, *fah_rph_hlo_Strpyog*, *int*, *int315.5*, *murEStrpyog*, *oppA*, *oppCStrpyog*, *oppD*, *SPy0382Strpyog*, *SPy0390Strpyog*, *SpyM3_1351*, *vicXStrpyog*;

(xvi) *Streptococcus viridans* including gene probes derived from *573Strpmut*, *580SStrpmut*, *581_582SStrpmut*, *584SStrpmut*, *dltAStrmut*, *dltBStrmut*, *dltCpx1Strmut*, *dltDStrmut*, *lichStrbov*, *lytRStprmut*, *lytSStrpmut*, *pepQStrmut*, *pflCStrmut*, *recNStprmut*, *ytqBStrmut*;

(xvii) *Proteus mirabilis* including gene probes derived from *atfA*, *atfB*, *atfC*, *ccmPrmi1*, *cyaPrmi*, *aad*, *flfB*, *flfD*, *flfN*, *flhD*, *floA*, *ftsK*, *gstB*, *hemCPrmi*, *hemDPrmi*, *hev*, *katA*, *lpp1*, *menE*, *mfd*, *nrpA*, *nrpB*, *nrpG*, *nrpS*, *nrpT*, *nrpU*, *pat*, *pmfA*, *pmfC*, *pmfE*, *ppaA*, *rsbA*, *rsbC*, *speB*, *stmA*, *stmB*, *terA*, *terD*, *umoA*, *umoB*, *umoC*, *ureR*, *xerC*, *ygbA*;

(xviii) *Proteus vulgaris* including gene probes derived from *envZPrvu*, *frdC*, *frdD*, *infBPrvu*, *lad*, *tna2*; and/or

(b) virulence gene probes for

(i) *Staphylococcus aureus* including gene probes derived from *bsaE*, *bsaG*, *cap5h*, *cap5i*, *cap5j*, *cap5k*, *cap8H*, *cap8I*, *capBJ*, *cap8K*, *I-hld*, *I-hysA*, *I-IgGbg*, *EDIN*, *eta*, *etb*, *hglA*, *hglB*, *hglC*, *hla*, *hlyB*, *lukF*, *lukS*, *NAG*, *sak*, *sea*, *seb*, *sec1*, *seg*, *seh*, *sel*, *set15*, *set6*, *set7*, *set8*, *sprV8*, *tst*, *I-sdrC*, *I-sdrD*, *I-sdrE*;

(ii) *Escherichia coli* including gene probes derived from *b1202*, *eae*, *eltB*, *escR*, *escT*, *escU*, *espB*, *fes*, *fteA*, *hlyA*, *hlyB*, *iucA*, *iucB*, *iucC*, *papG*, *rfaE*, *shuA*, *SLTII*, *toxA-LTPA*, *VT2vaB*;

(iii) *Staphylococcus epidermidis* including gene probes derived from *gcaD*, *hld_orf5*, *icaC*, *icaD*, *icaR*, *psm_beta1and2*, *purR*, *spoVG*, *yabJ*;

(iv) *Staphylococcus haemolyticus* including gene probes derived from *lipShaemolyt*;

(v) *Staphylococcus lugdunensis* including gene probes derived from *fbIStalugd*, *slushABCStalugd*;

(vi) *Staphylococcus warneri* including gene probes derived from *gehASTwar*;

(vii) *Candida albicans* including gene probes derived from *CCN1*, *CDC28*, *CLN2*, *CPH1*, *CYB1*, *EFG1*, *MNT1*, *RBF1*, *RBF1*, *RIM101*, *RIM8*, *SEC14*, *SEC4*, *TUP1*, *YPT1*, *ZNF1*, *CZF1* ;

(viii) *Enterococcus faecalis* including gene probes derived from *asa1*, *asp1*, *cgh*, *cylA*, *cylB*, *cylI*, *cylL*, *cylS*, *cylM*, *ace*, *ef00108*, *ef00109*, *ef0011*, *ef00113*, *ef0012*, *ef0022*, *ef0031*, *ef0032*, *ef0040*, *ef0058*,

entA, *esa*, *esp*, *gelE*, *groEL*, *groES*, *rt1*, *sala*, *salb*, *sea1*, *sep1*, *vicK*, *yycH*, *yycl*, *yycJ*;

(ix) *Enterococcus faecium* including gene probes derived from *entA_entl*, *entD*, *entR*, *oep*, *sagA*;

(x) *Klebsiella pneumonia* including gene probes derived from *cim*, *aldA*, *hemly*, *pSL017*, *pSL020*, *rscA*, *rmlC*, *rmlD*, *waaG*, *wbbD*, *wbbM*, *wbbN*, *wbdA*, *wbdC*, *wztKpn*, *yibD*;

(xi) *P. aeruginosa* including gene probes derived from *aprA*, *aprE*, *ctx*, *algB*, *algN*, *algR*, *ExoS*, *fpvA*, *lasRa*, *lipA*, *lipH*, *Orf159*, *Orf252*, *pchG*, *PhzA*, *PhzB*, *PLC*, *plcN*, *plcR*, *pvdD*, *pvdF*, *pyocinS1*, *pyocinS1im*, *pyocinS2*, *pys2*, *rbf303*, *rhlA*, *rhlB*, *rhlR*, *TnAP41*, *toxA*;

(xii) *Streptococcus pneumoniae* including gene probes derived from *igaStrpneu*, *lytA*, *nanA*, *nanBStrpneu*, *pcpCStrpneu*, *ply*, *prtAStrpneu*, *pspA*, *SP0834Strpneu*, *sphtraStrpneu*, *wciJStrpneu*, *wziyStrpneu*, *wzxStrpneu*;

(xiii) *Streptococcus agalactiae* including gene probes derived from *CAMPfactor*, *0499Straga*, *hylStragal*, *lipStragal*;

(xiv) *Streptococcus pyogenes* including gene probes derived from *DNaseIStrpyog*, *fba2Strpyog*, *fhuAS-trpyog*, *fhuB1Strpyog*, *fhuDStrpyog*, *fhuGStrpyog*, *hylA*, *hylP*, *hyLP2*, *oppB*, *ropB*, *scpAStrpyog*, *sloStrpyog*, *smezStrpyog*, *sof*, *speA*, *speB2Strpyog*, *speCStrpyog*, *speJStrpyog*, *srtBStrpyog*, *srtCStrpyog*, *srtEStrpyog*, *srtFStrpyog*, *srtGStrpyog*, *srtIStrpyog*, *srtKStrpyog*, *srtRStrpyog*, *srtTStrpyog*, *vicKStrpyog*;

(xvi) *Streptococcus viridans* including gene probes derived from *hlyXStrmut*, *igaStrmitis*, *igaStrsanguis*, *perMStrmut*;

(xvii) *Proteus mirabilis* including gene probes derived from *flaA*, *laD*, *fliA*, *hpmA*, *hpmB*, *lpsPrmi*, *mrpA*, *mrpB*, *mrpC*, *mrpD*, *mrpE*, *mrpF*, *mrpG*, *mrpH*, *mrpI*, *mrpJ*, *patA*, *putA*, *uca*, *ureDPrmi*, *ureEPrmi*, *ureFPrmi*, *zapA*, *zapB*, *zapD*, *zapE*; and/or

(c) resistance gene probes derived from genes coding for

(i) beta-lactams resistance including gene probes derived from *blaIMP-7*, *mecISepid*, *blaOXA-10*, *blaB*, *ampC*, *I-blaR*, *blaOXA-32*, *bla-CTX-M-22*, *bbp2aStrpneu*, *blaSHV-1*, *blaOXA-2*, *blaRShaemolyt*, *blaIMP-7*, *I-mecR*, *blaOXY*, *dacCStrpyog*, *femA*, *mecA*, *blaShaemolyt*, *blavim*, *bbp2b*, *bbp2prim*, *eSepid*, *bbp2x*, *bbp3Saureuc*, *bbp4*, *bbp5Efaecium*, *bbpC*, *I-mecI*, *bbp1a*, *I-blaI*, *blaTEM-106*, *blaOXY-KLOX*, *ftsWEF*, *fmhB*, *cumA*, *femBShaemolyt*, *blaPER-1*, *bla_FOX-3*, *blaA*, *psrb*, *fmhA*, *mecR1Sepid*, *blaZ*, *blaOXA-1*, *fox-6*, *blaPrmi*;

(ii) aminoglycosides resistance including gene probes derived from *aacA_aphDStwar*, *aacC1*, *aacC2*, *strB*, *aadA*, *aadB*, *aadD*, *aacA4*, *strA*, *aph-A3*, *aacC1*, *aacA4*, *aacA-aphD*, *I-spc*, *aphA3*;

(iii) macrolides-lincosamides-streptogramins resistance including gene probes derived from *ermC*, *linB*, *satSA*, *mdrSA*, *I-linA*, *ermB*, *ermA*, *satA*, *msrA*, *mphBM*, *mefA*, *mrx*;

(iv) trimethoprim resistance including gene probes derived from *dfrA*, *dfrStrpneu*;

(v) chloramphenicol resistance including gene probes derived from *cat*, *catEfaecium*, *cmlA5*;

(vi) tetracyclines resistance including gene probes derived from *tetAJ*, *tetL*, *tetM*

(vii) glycopeptides resistance including gene probes derived from *vanH(tn)*, *vanA*, *vanHB2*, *vanR*, *vanRB2*, *vanS(tn)*, *vanSB2*, *vanVIB2*, *ddl*, *ble*, *vanXB2*, *vanY(tn)*, *vanYB2*, *vanB*, *vanZ(tn)*, *vanC-2*, *vanX(tn)*;

(viii) multiple target resistance including gene probes derived from *acrB*, *m exB*, *I-qacA*, *sull*, *sul*, *cadB-Stalugd*, *mexA*, *acrR*, *emeA*, *acrA*, *rtn*, *abcXStrpmut*, *qacEdelta1*, *elkT-abcA*, *I-cadA*, *alba*, *wzm*, *msrCb*, *nov*, *wzt*, *wbbI*, *norA23*, *mexR*, *arr2*, *mreA*, *I-cadC*, *uvrA*;

(ix) fungicide resistance, especially *C. albicans* fungicide resistance, including gene probes derived from *CRD2*, *CDR1*, *MET3*, *FET3*, *FTR2*, *MDR1-7*, *ERG11*, *SEC20*.

4. The DNA microarray of claim 2 or 3, wherein

(i) the array comprises the minimal number of species specific gene probes of group (a) which is sufficient for species identification, preferably the array comprises at least 2 different gene probes per target species of group (a); and/or

(ii) the array comprises the minimal number of virulence gene probes of group (b) sufficient for virulence determination, preferably at least 1 gene probe, more preferably at least 5 different gene probes per target species of group (b); and/or

(iii) the array comprises the minimal number of resistance gene probes of group (c) sufficient for determination of resistance, preferably at least 1 gene probe, more preferably at least 5 different gene probes of group (c); and/or

(iv) the DNA sequences are selected from the group consisting of SEQ ID NOs 1-918, complementary sequences thereto, addition mutants, deletion mutants, substitution mutants and homologues thereof.

5. The DNA microarray of claim 4, wherein

(i) the gene probes of group (a) are selected from SEQ ID NO: 1-99, 142-152, 174-199, 209-214, 216-219, 222-229, 231-291, 308-342, 377-393, 399-431, 449-490, 523-591, 606-639, 645-656, 687-701, 706-749 and 776-781;

(ii) the gene probes of group (b) are selected from SEQ ID NO: 100-141, 153-173, 200-208, 215, 220-221, 230, 292-307, 343-376, 394-398, 432-448, 491-522, 592-605, 640-644, 657-686, 702-705, 750-775 and 782-784; and/or

(iii) the gene probes of group (c) are selected from SEQ ID NO:785-918, preferably from SEQ ID NO:785-882.

6. The DNA microarray of claim 4 or 5, which

(I) is suitable for identification of *Staphylococcus aureus* and comprises one or more or all of the gene probes of group (a) selected from SEQ ID NO:1-99, preferably comprises at least the gene probes represented by SEQ ID NO:71 and 68; and/or

(II) is suitable for identification of *Escherichia coli* and comprises one or more or all of the gene probes of group (a) selected from SEQ ID NO:142-152, preferably at least the gene probes represented by SEQ ID NO:143 and 149; and/or

(III) is suitable for identification of *Staphylococcus epidermidis* and comprises gene probes of group (a) selected from SEQ ID NO:174-199, preferably at least the gene probes represented by SEQ ID NO:177 and 184; and/or

(IV) is suitable for identification of *Staphylococcus haemolyticus* and comprises one or more or all of the gene probes of group (a) selected from SEQ ID NO:209-214, preferably at least the gene probes represented by SEQ ID NO:209 and 210; and/or

(V) is suitable for identification of *Staphylococcus lugdunensis* and comprises one or more or all of the gene probes of group (a) selected from SEQ ID NO:216-219, preferably at least the gene probes represented by SEQ ID NO:216 and 219; and/or

(VI) is suitable for identification of *Staphylococcus warneri* and comprises one or more or all of the gene probes of group (a) selected from SEQ ID NO: 224-229, preferably at least the gene probes represented by SEQ ID NO: 224 and 225; and/or

(VII) is suitable for identification of *Candida albicans* and comprises one or more or all of the gene probes of group (a) selected from SEQ ID NO:231-291, preferably at least the gene probes represented by SEQ ID NO: 231 and 232; and/or

(VIII) is suitable for identification of *Enterococcus faecalis* and comprises one or more or all of the gene probes of group (a) selected from SEQ ID NO:308-342, preferably at least the gene probes represented by SEQ ID NO:308 and 310; and/or

(IX) is suitable for identification of *Enterococcus faecium* and comprises one or more or all of the gene probes of group (a) selected from SEQ ID NO:377-393, preferably at least the gene probes represented by SEQ ID NO:377 and 380; and/or

(X) is suitable for identification of *Klebsiella pneumonia* and comprises one or more or all of the gene probes of group (a) selected from SEQ ID NO:399-431, preferably at least the gene probes represented by SEQ ID NO:399 and 402; and/or

(XI) is suitable for identification of *Klebsiella oxytoca* and comprises one or more or all of the gene probes of group (a) selected from SEQ ID NO:449-469, preferably at least the gene probes represented by SEQ ID NO: 449 and 455; and/or

(XII) is suitable for identification of *Pseudomonas aeruginosa* and comprises one or more or all of the gene probes of group (a) selected from SEQ ID NO:470-490, preferably at least the gene probes represented by SEQ ID NO:470 and 471; and/or

(XIII) is suitable for identification of *Streptococcus pneumoniae* and comprises one or more or all of the gene probes of group (a) selected from SEQ ID NO:523-591, preferably at least the gene probes represented by SEQ ID NO:523 and 524; and/or

(XIV) is suitable for identification of *Streptococcus agalactiae* and comprises one or more or all of the gene probes of group (a) selected from SEQ ID NO:606-639, preferably at least the gene probes represented by SEQ ID NO:606 and 619; and/or

(XV) is suitable for identification of *Streptococcus pyogenes* and comprises one or more or all of the gene probes of group (a) selected from SEQ ID NO:645-656, preferably at least the gene probes represented by SEQ ID NO:645 and 646; and/or

(XVI) is suitable for identification of *Streptococcus viridans* and comprises one or more or all of the gene probes of group (a) selected from SEQ ID NO:687-701, preferably at least the gene probes represented by SEQ ID

NO:687 and 691 ; and/or

(XVII) is suitable for identification of *Proteus mirabilis* and comprises one or more or all of the gene probes of group (a) selected from SEQ ID NO:706-749, preferably at least the gene probes represented by SEQ ID NO: 706 and 710; and/or

(XVIII) is suitable for identification of *Proteus vulgaris* and comprises one or more or all of the gene probes of group (a) selected from SEQ ID NO:776-781, preferably at least the gene probes represented by SEQ ID NO: 776 and 777.

7. The DNA microarray of claim 6, which further comprises

(I) for the characterisation of *Staphylococcus aureus*: one or more or all of the gene probes of group (b) selected from SEQ ID NO:100-141, and/or of the gene probes of group (c) selected from SEQ ID NO:785-909; and/or

(II) for the characterisation of *Escherichia coli*: one or more or all of the gene probes of group (b) selected from SEQ ID NO:153-173, and/or of the gene probes of group (c) selected from SEQ ID NO:785-909; and/or

(III) for the characterisation of *Staphylococcus epidermidis*: one or more or all of the gene probes of group (b) selected from SEQ ID NO:200-208, and/or of the gene probes of group (c) selected from SEQ ID NO:785-909; and/or

(IV) for the characterisation of *Staphylococcus haemolyticus*: one or more or all of the gene probe of group (b) represented by SEQ ID NO:215, and/or of the gene probes of group (c) selected from SEQ ID NO:785-909; and/or

(V) for the characterisation of *Staphylococcus lugdunensis*: one or more or all of the gene probes of group (b) selected from SEQ ID NO:220-221, and/or of the gene probes of group (c) selected from SEQ ID NO:785-909; and/or

(VI) for the characterisation of *Staphylococcus warneri*: one or more or all of the gene probe of group (b) represented by SEQ ID NO:230, and/or of the gene probes of group (c) selected from SEQ ID NO:785-909; and/or

(VII) for the characterisation of *Candida albicans*: one or more or all of the gene probes of group (b) selected from SEQ ID NO:292-307, and/or of the gene probes of group (c) selected from SEQ ID NO:910-918; and/or

(VIII) for the characterisation of *Enterococcus faecalis*: one or more or all of the gene probes of group (b) selected from SEQ ID NO:343-376, and/or of the gene probes of group (c) selected from SEQ ID NO:785-909; and/or

(IX) for the characterisation of *Enterococcus faecium*: one or more or all of the gene probes of group (b) selected from SEQ ID NO:394-398, and/or of the gene probes of group (c) selected from SEQ ID NO:785-909; and/or

(X) for the characterisation of *Klebsiella pneumoniae*: one or more or all of the gene probes of group (b) selected from SEQ ID NO:432-448, and/or of the gene probes of group (c) selected from SEQ ID NO:785-909; and/or

(XI) for the characterisation of *Klebsiella oxytoca*: one or more or all of the gene probes of group (c) selected from SEQ ID NO:785-909; and/or

(XII) for the characterisation of *Pseudomonas aeruginosa*: one or more or all of the gene probes of group (b) selected from SEQ ID NO:491-522, and/or of the gene probes of group (c) selected from SEQ ID NO:785-909; and/or

(XIII) for the characterisation of *Streptococcus pneumoniae*: one or more or all of the gene probes of group (b) selected from SEQ ID NO:592-605, and/or of the gene probes of group (c) selected from SEQ ID NO:785-909; and/or

(XIV) for the characterisation of *Streptococcus agalactiae*: one or more or all of the gene probes of group (b) selected from SEQ ID NO:640-644, and/or of the gene probes of group (c) selected from SEQ ID NO:785-909; and/or

(XV) for the characterisation of *Streptococcus pyogenes*: one or more or all of the gene probes of group (b) selected from SEQ ID NO:657-686, and/or of the gene probes of group (c) selected from SEQ ID NO:785-909; and/or

(XVI) for the characterisation of *Streptococcus viridans*: one or more or all of the gene probes of group (b) selected from SEQ ID NO:702-705, and/or of the gene probes of group (c) selected from SEQ ID NO:785-909; and/or

(XVII) for the characterisation of *Proteus mirabilis*: one or more or all of the gene probes of group (b) selected from SEQ ID NO:750-775, and/or of the gene probes of group (c) selected from SEQ ID NO:785-909; and/or

(XVIII) for the characterisation of *Proteus vulgaris*: one or more or all of the gene probes of group (b) selected from SEQ ID NO:782-784, and/or of the gene probes of group (c) selected from SEQ ID NO:785-909.

8. Use of the DNA microarray of any of claims 1 - 7 for *in vitro* identification and characterisation of microorganisms

in a sample or in a clinical specimen, preferably for the diagnosis of bacteremia or sepsis.

9. An *in vitro* method for identification and characterisation of microorganisms in a sample or in a clinical specimen comprising

- (a) isolating the total DNA from the sample or clinical specimen and labelling the DNA with a reporter molecule;
- (b) applying the DNA thus obtained to the DNA microarray of anyone of claims 1-7 and hybridising the DNA with the gene probes of the DNA microarray; and
- (c) detecting DNA bound to the DNA microarray by determination of the amount of the reporter molecules bound to the array.

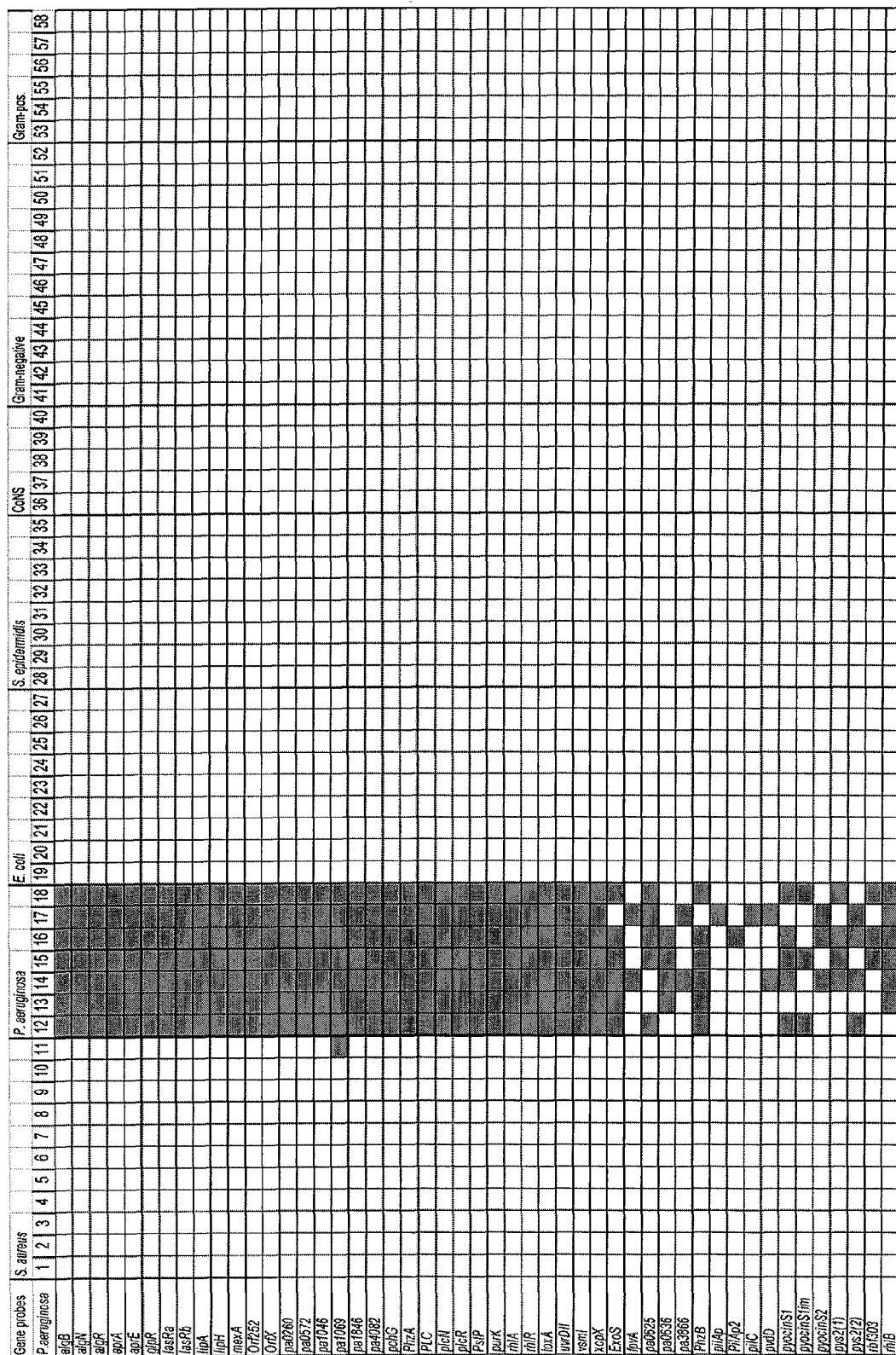
10. The method of claim 9,

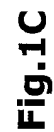
- (i) which is a method for diagnosis of bacteremia, fungemia or sepsis; and/or
- (ii) wherein the clinical specimen is a positive blood culture; and/or
- (iii) wherein the ratio of microbial DNA to total DNA isolated from said sample or clinical specimen is less than 100 %, preferably from 1% to 99%; and/or
- (iv) wherein the reporter molecule is a fluorochrome; and/or
- (v) wherein the determination of the amount of reporter molecules bound to the array is achieved by visualization of the reporter molecule; and/or
- (vi) wherein the DNA isolated in step (a) is labelled and applied to the DNA microarray without prior amplification.

11. A kit for detection of microorganisms in a sample or clinical specimen comprising the microarray of anyone of claims 1 to 7.



Fig. 1A





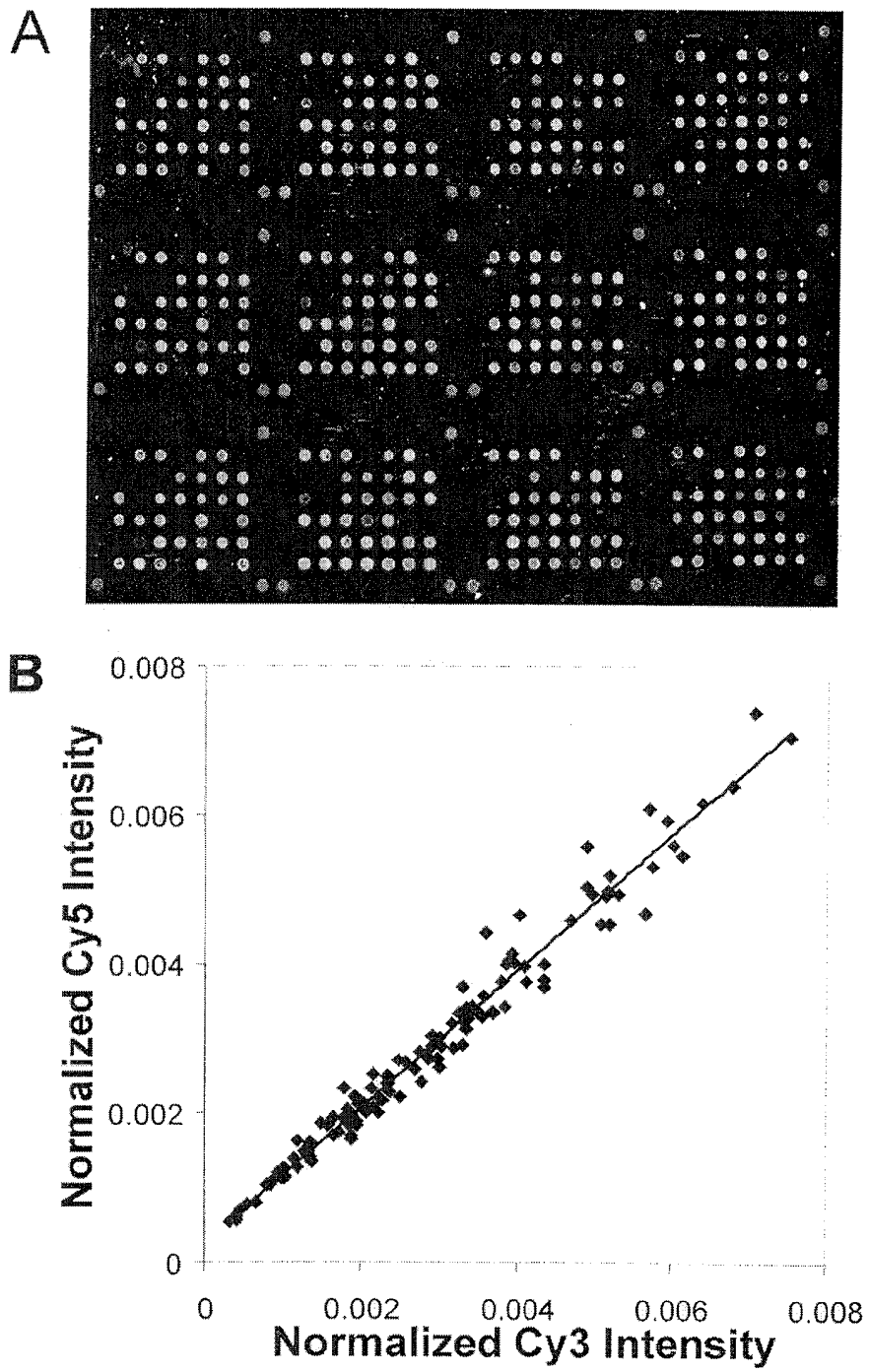


Fig.2

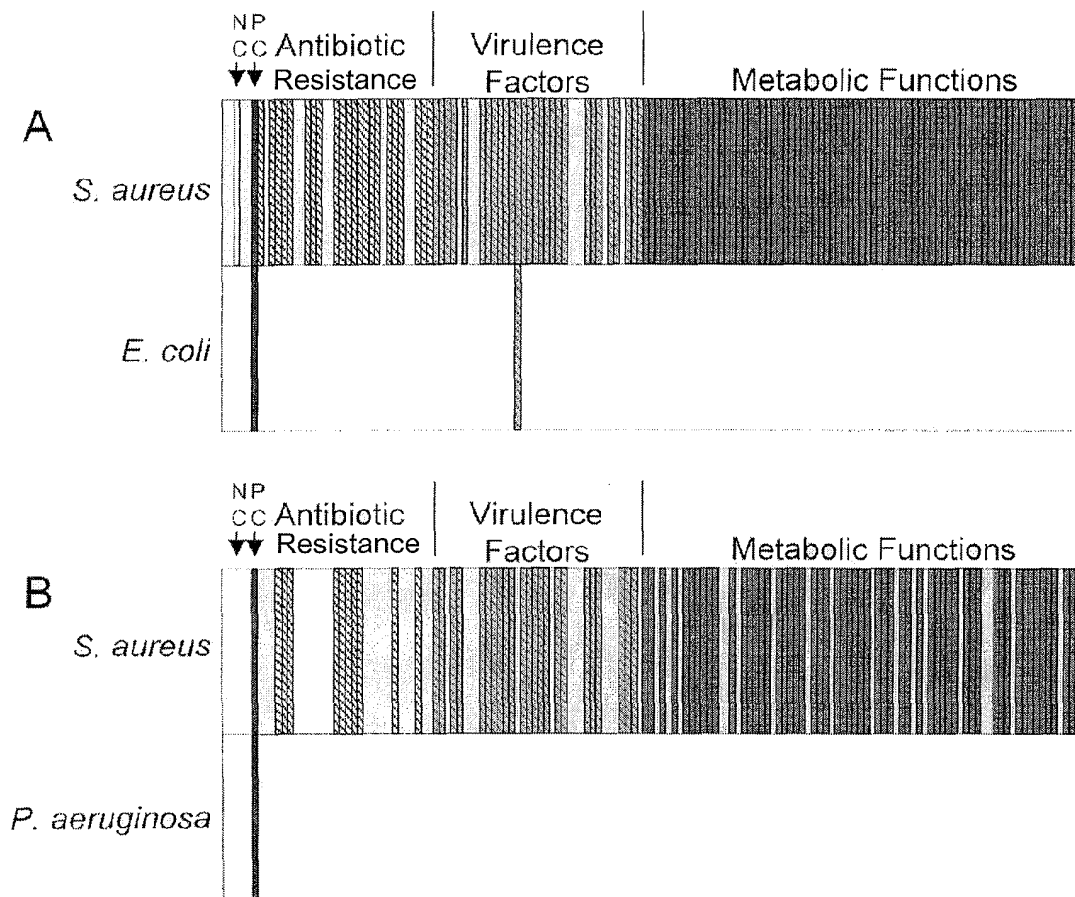


Fig.3

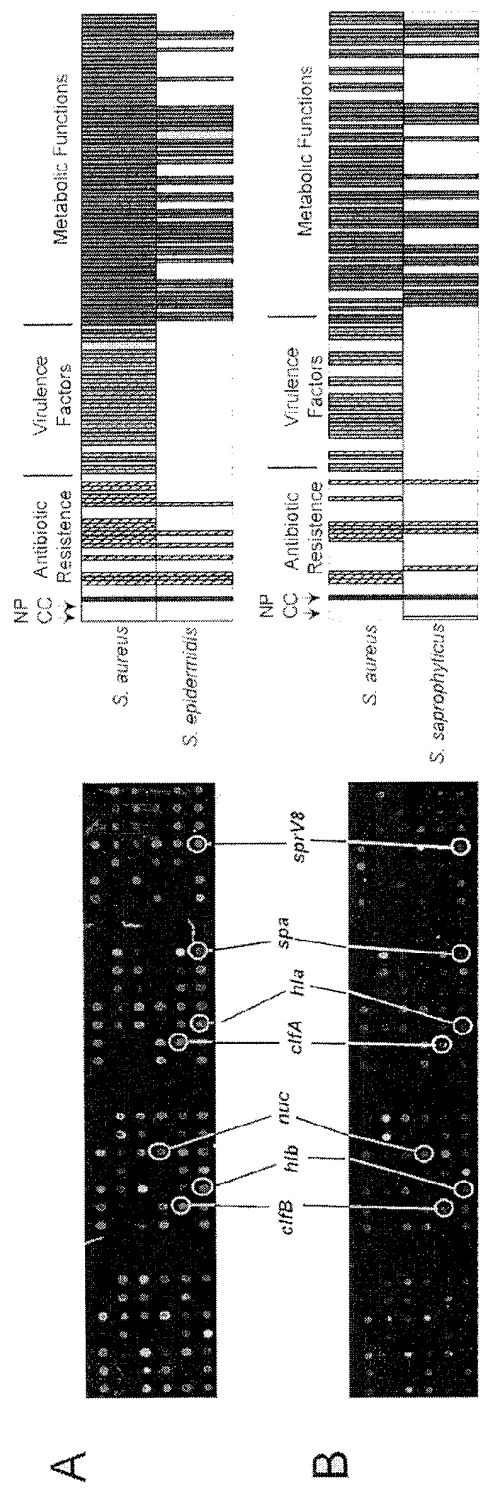


Fig.4

804

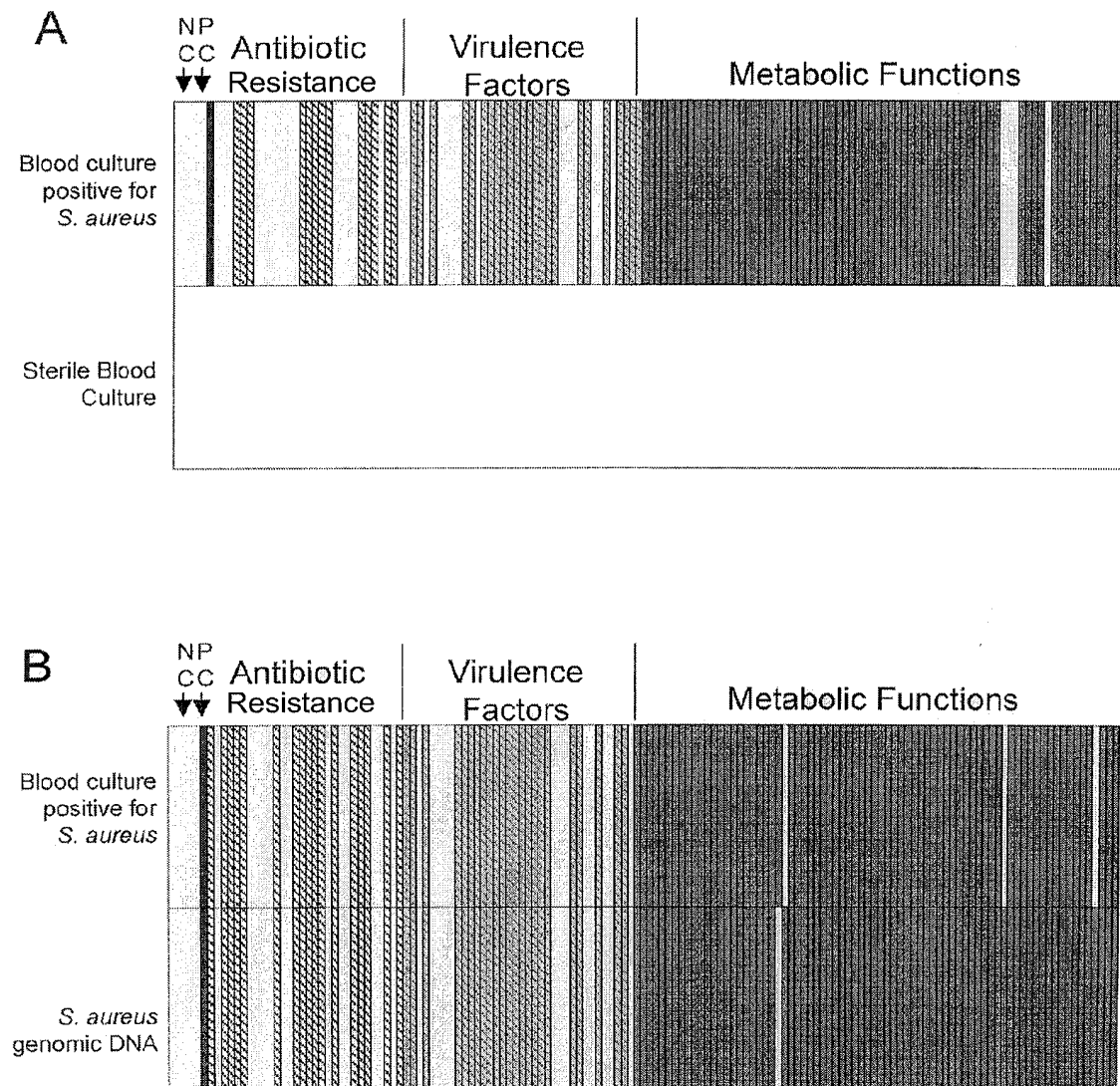


Fig.6



European Patent
Office

PARTIAL EUROPEAN SEARCH REPORT

Application Number

which under Rule 45 of the European Patent Convention EP 05 10 9025 shall be considered, for the purposes of subsequent proceedings, as the European search report

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 6 747 137 B1 (WEINSTOCK KEITH G ET AL) 8 June 2004 (2004-06-08) * paragraph [0244] * * paragraphs [0132], [0133] * * paragraph [0012] * * sequence 3589 *	1-11	INV. C12Q1/68
A	NAKAMURA M ET AL: "DEVELOPMENT OF THE DNA MICRO ARRAY FOR IDENTIFICATION OF INFECTIOUS DISEASE CAUSACTIVE BACTERIA IN HUMAN" 18 May 2003 (2003-05-18), ABSTRACTS OF THE GENERAL MEETING OF THE AMERICAN SOCIETY FOR MICROBIOLOGY, THE SOCIETY, WASHINGTON, DC, US, PAGE(S) ABSTRNOC219 , XP008047725 ISSN: 1060-2011 * abstract *	1-11	
A	EP 1 310 569 A (PRESIDENT OF GIFU UNIVERSITY) 14 May 2003 (2003-05-14) * claim 14 *	1-11	TECHNICAL FIELDS SEARCHED (IPC) C12Q
<p style="text-align: center;">----- -/--</p>			
INCOMPLETE SEARCH			
<p>The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC to such an extent that a meaningful search into the state of the art cannot be carried out, or can only be carried out partially, for these claims.</p> <p>Claims searched completely :</p> <p>Claims searched incompletely :</p> <p>Claims not searched :</p> <p>Reason for the limitation of the search:</p> <p>see sheet C</p>			
Place of search Munich		Date of completion of the search 19 December 2005	Examiner Helliot, B
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

10

EPC FORM 1508 03/82 (F04C07)

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (IPC)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
A	WO 92/07096 A (MICROPROBE CORPORATION) 30 April 1992 (1992-04-30) * page 12, paragraph 2 * * page 27, paragraph 2 * * example 6 *	1-11	<div>TECHNICAL FIELDS SEARCHED (IPC)</div>
A	LEHNER A ET AL: "Oligonucleotide microarray for identification of Enterococcus species" 1 May 2005 (2005-05-01), FEMS MICROBIOLOGY LETTERS, AMSTERDAM, NL, PAGE(S) 133-142 , XP004876200 ISSN: 0378-1097 * abstract *	1-11	
A	WANG R-F ET AL: "DNA microarray analysis of predominant human intestinal bacteria in fecal samples" August 2004 (2004-08), MOLECULAR AND CELLULAR PROBES, ACADEMIC PRESS, LONDON, GB, PAGE(S) 223-234 , XP004522575 ISSN: 0890-8508 * abstract; tables 1,2 *	1-11	



Claim(s) searched completely:
1-5,7-21

Claim(s) searched incompletely:
6

Reason for the limitation of the search:

The present remarks apply to the only searched invention. If further search fees were paid, similar remarks could apply to the further searched inventions, leading to an incomplete search.

The present claim 6 relates to an DNA microarray suitable for the detection of *Staphylococcus aureus* and/or other microorganisms, among them *C. albicans*, using one or more or all gene probes listed as SEQ ID N° 1-909.

However, in view of the extremely large number of possible probes mentioned in the said claim, the said claim 6 lacks clarity and conciseness in the sense of Article 84 and a meaningful search of the whole claimed subject-matter of the claim could not be carried out (Rule 45 EPC and Guidelines B-VIII, 3).

The search of claim 6 was, thus, limited to the only microarray clearly disclosed in the application and suitable for the identification of *C. albicans*, namely the microarray comprising either the gene probe listed as SEQ ID N° 231 (irrespective of any other probes) or the whole of the genes listed as SEQ ID N° 1-909, and having a length of at least 100 nucleotides.



European Patent
Office

Application Number
EP 05 10 9025

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:
- 1-11 (all partially)



The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

Invention 1: 1-11 (all partially)

A DNA microarray for direct identification of *Candida albicans* in a sample or clinical specimen, wherein the microarray comprises the gene probe listed as SEQ ID N° 231 or the whole of the genes listed as SEQ ID N° 1-909, and having a length of at least 100 nucleotides.

Use of the DNA microarray.

An in vitro method for identification and characterisation of microorganisms in a sample or in a clinical specimen.

A kit for the detection of microorganisms in a sample or clinical specimen.

Inventions 2-85: claims 1-11 (all partially)

A DNA microarray for direct identification of *Candida albicans* in a sample or clinical specimen, wherein the microarray comprises one gene probe selected among the gene probes listed as SEQ ID N° n (wherein n is an integer comprised between 232 and 307 and between 910 and 918), and having a length of at least 100 nucleotides.

Use of the DNA microarray.

An in vitro method for identification and characterisation of microorganisms in a sample or in a clinical specimen.

A kit for the detection of microorganisms in a sample or clinical specimen.

Inventions 86-278: claims 1-11 (all partially)

A DNA microarray for direct identification of *Enterococcus faecalis* in a sample or clinical specimen, wherein the microarray comprises one gene probe selected among the gene probes listed as SEQ ID N° n (wherein n is an integer comprised between 308 and 376 and between 785 and 909), and having a length of at least 100 nucleotides.

Use of the DNA microarray.

An in vitro method for identification and characterisation of microorganisms in a sample or in a clinical specimen.

A kit for the detection of microorganisms in a sample or clinical specimen.

Inventions 279-300: claims 1-11 (all partially)



The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

A DNA microarray for direct identification of *Enterococcus faecium* in a sample or clinical specimen, wherein the microarray comprises one gene probe selected among the gene probes listed as SEQ ID N° n (wherein n is an integer comprised between 377 and 398), and having a length of at least 100 nucleotides.

Use of the DNA microarray.

An in vitro method for identification and characterisation of microorganisms in a sample or in a clinical specimen.

A kit for the detection of microorganisms in a sample or clinical specimen.

Inventions 301-333: claims 1-11 (all partially)

A DNA microarray for direct identification of *Escherichia coli* in a sample or clinical specimen, wherein the microarray comprises one gene probe selected among the gene probes listed as SEQ ID N° n (wherein n is an integer comprised between 142 and 173) or gene probes as listed in Tab. 2 of Example 4, and having a length of at least 10 nucleotides.

Use of the DNA microarray.

An in vitro method for identification and characterisation of microorganisms in a sample or in a clinical specimen.

A kit for the detection of microorganisms in a sample or clinical specimen.

Invention 334: claims 1-11 (all partially)

A DNA microarray for direct identification of *Klebsiella oxytoca* in a sample or clinical specimen, wherein the microarray comprises gene probes listed as SEQ ID N° n (wherein n is an integer comprised between 449 and 469), and having a length of at least 100 nucleotides.

Use of the DNA microarray.

An in vitro method for identification and characterisation of microorganisms in a sample or in a clinical specimen.

A kit for the detection of microorganisms in a sample or clinical specimen.

Inventions 335-384: claims 1-11 (all partially)



The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

A DNA microarray for direct identification of *Klebsiella pneumoniae* in a sample or clinical specimen, wherein the microarray comprises one gene probe selected among the gene probes listed as SEQ ID N° n (wherein n is an integer comprised between 399 and 448), and having a length of at least 100 nucleotides.

Use of the DNA microarray.

An in vitro method for identification and characterisation of microorganisms in a sample or in a clinical specimen.

A kit for the detection of microorganisms in a sample or clinical specimen.

Invention 385: claims 1-11 (all partially)

A DNA microarray for direct identification of *Proteus mirabilis* and *vulgaris* in a sample or clinical specimen, wherein the microarray comprises gene probes listed as SEQ ID N° n (wherein n is an integer comprised between 706 and 775 and between 776 and 784), and having a length of at least 100 nucleotides.

Use of the DNA microarray.

An in vitro method for identification and characterisation of microorganisms in a sample or in a clinical specimen.

A kit for the detection of microorganisms in a sample or clinical specimen.

Invention 386: claims 1-2, 8-11 (all partially)

A DNA microarray for direct identification of *Enterobacter cloacae* in a sample or clinical specimen.

Use of the DNA microarray.

An in vitro method for identification and characterisation of microorganisms in a sample or in a clinical specimen.

A kit for the detection of microorganisms in a sample or clinical specimen.

Inventions 387-439: claims 1-11 (all partially)



The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

A DNA microarray for direct identification of *Pseudomonas aeruginosa* in a sample or clinical specimen, wherein the microarray comprises one gene probe selected among the gene probes listed as SEQ ID N° n (wherein n is an integer comprised between 470 and 522), and having a length of at least 100 nucleotides.

Use of the DNA microarray.

An in vitro method for identification and characterisation of microorganisms in a sample or in a clinical specimen.

A kit for the detection of microorganisms in a sample or clinical specimen.

Invention 440: claims 1-2, 8-11 (all partially)

A DNA microarray for direct identification of *Stenotrophomonas maltophilia* in a sample or clinical specimen.

Use of the DNA microarray.

An in vitro method for identification and characterisation of microorganisms in a sample or in a clinical specimen.

A kit for the detection of microorganisms in a sample or clinical specimen.

Invention 441: claims 1-2, 8-11 (all partially)

A DNA microarray for direct identification of *Acinetobacter baumannii* in a sample or clinical specimen.

Use of the DNA microarray.

An in vitro method for identification and characterisation of microorganisms in a sample or in a clinical specimen.

A kit for the detection of microorganisms in a sample or clinical specimen.

Inventions 442-581: claims 1-11 (all partially)

A DNA microarray for direct identification of *Staphylococcus aureus* in a sample or clinical specimen, wherein the microarray comprises one gene probe selected among the gene probes listed as SEQ ID N° n (wherein n is an integer comprised between 1 and 141), and having a length of at least 100 nucleotides.

Use of the DNA microarray.

An in vitro method for identification and characterisation of microorganisms in a sample or in a clinical specimen.

A kit for the detection of microorganisms in a sample or clinical specimen.



The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

Inventions 582-616: claims 1-11 (all partially)

A DNA microarray for direct identification of *Staphylococcus epidermidis* in a sample or clinical specimen, wherein the microarray comprises one gene probe selected among the gene probes listed as SEQ ID N° n (wherein n is an integer comprised between 174 and 208), and having a length of at least 100 nucleotides.

Use of the DNA microarray.

An in vitro method for identification and characterisation of microorganisms in a sample or in a clinical specimen.

A kit for the detection of microorganisms in a sample or clinical specimen.

Invention 617: claims 1-11 (all partially)

A DNA microarray for direct identification of *Staphylococcus haemolyticus* in a sample or clinical specimen, wherein the microarray comprises gene probes listed as SEQ ID N° n (wherein n is an integer comprised between 209 and 215), and having a length of at least 100 nucleotides.

Use of the DNA microarray.

An in vitro method for identification and characterisation of microorganisms in a sample or in a clinical specimen.

A kit for the detection of microorganisms in a sample or clinical specimen.

Invention 618: claims 1-11 (all partially)

A DNA microarray for direct identification of *Staphylococcus lugdunensis* in a sample or clinical specimen, wherein the microarray comprises gene probes listed as SEQ ID N° n (wherein n is an integer comprised between 216 and 221), and having a length of at least 100 nucleotides.

Use of the DNA microarray.

An in vitro method for identification and characterisation of microorganisms in a sample or in a clinical specimen.

A kit for the detection of microorganisms in a sample or clinical specimen.

Invention 619: claims 1-11 (all partially)



The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

A DNA microarray for direct identification of *Staphylococcus warneri* in a sample or clinical specimen, wherein the microarray comprises gene probes listed as SEQ ID N° n (wherein n is an integer comprised between 224 and 230), and having a length of at least 100 nucleotides.

Use of the DNA microarray.

An in vitro method for identification and characterisation of microorganisms in a sample or in a clinical specimen.

A kit for the detection of microorganisms in a sample or clinical specimen.

Invention 620: claims 1-11 (all partially)

A DNA microarray for direct identification of *Streptococcus agalactiae* in a sample or clinical specimen, wherein the microarray comprises gene probes listed as SEQ ID N° n (wherein n is an integer comprised between 606 and 644), and having a length of at least 100 nucleotides.

Use of the DNA microarray.

An in vitro method for identification and characterisation of microorganisms in a sample or in a clinical specimen.

A kit for the detection of microorganisms in a sample or clinical specimen.

Invention 621: claims 1-2, 8-11 (all partially)

A DNA microarray for direct identification of *Streptococcus bovis* in a sample or clinical specimen.

Use of the DNA microarray.

An in vitro method for identification and characterisation of microorganisms in a sample or in a clinical specimen.

A kit for the detection of microorganisms in a sample or clinical specimen.

Invention 622: claims 1-2, 8-11 (all partially)

A DNA microarray for direct identification of *Streptococcus dysgalactiae* in a sample or clinical specimen.

Use of the DNA microarray.

An in vitro method for identification and characterisation of microorganisms in a sample or in a clinical specimen.

A kit for the detection of microorganisms in a sample or clinical specimen.

Invention 623: claims 1-2, 8-11 (all partially)



The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

A DNA microarray for direct identification of *Streptococcus mitis* in a sample or clinical specimen.
 Use of the DNA microarray.
 An in vitro method for identification and characterisation of microorganisms in a sample or in a clinical specimen.
 A kit for the detection of microorganisms in a sample or clinical specimen.

Invention 624: claims 1-2, 8-11 (all partially)

A DNA microarray for direct identification of *Streptococcus mutans* in a sample or clinical specimen.
 Use of the DNA microarray.
 An in vitro method for identification and characterisation of microorganisms in a sample or in a clinical specimen.
 A kit for the detection of microorganisms in a sample or clinical specimen.

Inventions 625-831: claims 1-11 (all partially)

A DNA microarray for direct identification of *Streptococcus pneumoniae* in a sample or clinical specimen, wherein the microarray comprises one gene probe selected among the gene probes listed as SEQ ID N° n (wherein n is an integer comprised between 399 and 605), and having a length of at least 100 nucleotides.
 Use of the DNA microarray.
 An in vitro method for identification and characterisation of microorganisms in a sample or in a clinical specimen.
 A kit for the detection of microorganisms in a sample or clinical specimen.

Inventions 832-873: claims 1-11 (all partially)

A DNA microarray for direct identification of *Streptococcus pyogenes* in a sample or clinical specimen, wherein the microarray comprises one gene probe selected among the gene probes listed as SEQ ID N° n (wherein n is an integer comprised between 645 and 686), and having a length of at least 100 nucleotides.
 Use of the DNA microarray.
 An in vitro method for identification and characterisation of microorganisms in a sample or in a clinical specimen.
 A kit for the detection of microorganisms in a sample or clinical specimen.

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 05 10 9025

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

19-12-2005

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6747137	B1	08-06-2004	NONE	

EP 1310569	A	14-05-2003	CA 2411537 A1	09-05-2003
			JP 2003144153 A	20-05-2003
			US 2003091991 A1	15-05-2003

WO 9207096	A	30-04-1992	AT 161893 T	15-01-1998
			DE 69128639 D1	12-02-1998
			DE 69128639 T2	23-04-1998
			DK 554355 T3	11-05-1998
			EP 0554355 A1	11-08-1993
			ES 2112868 T3	16-04-1998
			GR 3026488 T3	31-07-1998
			HK 1005488 A1	08-01-1999
			JP 6502305 T	17-03-1994

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Non-patent literature cited in the description

- MYLOTTE, J.M. ; TAYARA, A. *Eur. Clin. Microbiol. Infect. Dis.*, 2000, vol. 19, 157-163 [0004]
- REIMER, L.G. et al. *Clin. Microbiol. Rev.*, 1997, vol. 10, 444-465 [0004]
- DECOUSSER, J. W. et al. *J. Antimicrob. Chemother.*, 2003, vol. 51, 1214-22 [0007]
- LYYTIKAINEN, O. et al. *Clin. Infect. Dis.*, 2002, vol. 35, 314-9 [0007]
- REACHER, M.H. et al. *BMJ*, 2000, vol. 320, 213-6 [0007] [0013]
- ROSENTHAL KREUBERGER, E.J. *Int. J. Antimicrob. Agents*, 2004, vol. 24, 196-8 [0007]
- BOURBEAU, P.P. ; POHLMAN, J.K. *J. Clin. Microbiol.*, 2001, vol. 39, 2079-82 [0007]
- REIMER, L.G. et al. *Clin. Microbiol. Rev.*, 1997, vol. 10, 444-65 [0007] [0013] [0013] [0013]
- REISNER, L.G. et al. *J. Clin. Microbiol.*, 1999, vol. 37, 2024-6 [0007]
- WILSON, M.L. et al. *J. Clin. Microbiol.*, 1999, vol. 37, 1709-13 [0007]
- RELLO, J. et al. *Intensive Care Med.*, 1994, vol. 20, 94-98 [0008] [0011]
- MYLOTTE, J.M. ; TAYARA, A. *Eur. Clin. Microbiol. Infect. Dis.*, 2000, vol. 19, 157-163 [0008]
- WEINSTEIN, M.P. et al. *Clin. Infect. Dis.*, 1997, vol. 24, 584-602 [0008] [0011]
- BOURBEAU, P.P. ; POHLMAN, J.K. *J. Clin. Microbiol.*, 2001, vol. 39, 2079-2082 [0008]
- BARENFANGER, J. et al. *J. Clin. Microbiol.*, 1999, vol. 37, 1415-8 [0009]
- DOERN, G.V. et al. *J. Clin. Microbiol.*, 1994, vol. 32, 1757-62 [0009]
- TRENHOLME, G.M. et al. *J. Clin. Microbiol.*, 1989, vol. 27, 1342-5 [0009]
- WHEELER, A.P. ; BERNARD, G.R. *N. Engl. J. Med.*, 1999, vol. 340, 207-14 [0009]
- JAMES, P.A. ; AL-SHAFI, K.M. *J. Clin. Pathol.*, 2000, vol. 53, 231-233 [0010] [0011]
- REISNER, B.S. ; WOODS, G.L. *J. Clin. Microbiol.*, 1999, vol. 37, 2024-2026 [0010]
- WILSON, M.L. et al. *J. Clin. Microbiol.*, 1999, vol. 37, 1709-1713 [0010]
- LEVI, K. ; TOWNER, K.J. *J. Clin. Microbiol.*, 2003, vol. 41, 3890-3892 [0010]
- OLIVEIRA, K. et al. *J. Clin. Microbiol.*, 2003, vol. 41, 889-891 [0010] [0011] [0014]
- OLIVEIRA, K. et al. *J. Clin. Microbiol.*, 2002, vol. 40, 247-251 [0010]
- TAN, T.Y. et al. *J. Clin. Microbiol.*, 2001, vol. 39, 4529-4531 [0010] [0011] [0014]
- REISNER, B.S. ; WOODS, G.L. *J. Clin. Microbiol.*, 1999, vol. 37, 2024-2026 [0011]
- VELASCO, E. et al. *Sao Paulo Med. J.*, 2000, vol. 118, 131-138 [0011]
- MCCLELLAND, R.S. et al. *Arch. Intern. Med.*, 1999, vol. 159, 1244-1247 [0011]
- LYYTIKAINEN, O. et al. *Clin. Infect. Dis.*, 2002, vol. 35, e14-9 [0013]
- HANSEN, D.S. et al. *Clin. Microbiol. Infect.*, 2002, vol. 8, 38-44 [0013]
- LING, T.K. et al. *J. Clin. Microbiol.*, 2003, vol. 41, 4705-7 [0013] [0013]
- FUNKE, G. ; FUNKE-KISSLING, P. *J. Clin. Microbiol.*, 2004, vol. 42, 1466-70 [0013]
- FUNKE, G. ; FUNKE-KISSLING, P. *J. Clin. Microbiol.*, 2004, vol. 42, 1466-70 [0013]
- CHAPIN, K. ; MUSGNUM, M. *J. Clin. Microbiol.*, 2003, vol. 41, 4324-7 [0014]
- JANSEN, G.J. et al. *J. Clin. Microbiol.*, 2000, vol. 38, 814-7 [0014]
- KEMPF, V.A. et al. *J. Clin. Microbiol.*, 2000, vol. 38, 830-8 [0014]
- OLIVEIRA, K. et al. *J. Clin. Microbiol.*, 2003, vol. 41, 889-91 [0014]
- ANTHONY, R.M. et al. *J. Clin. Microbiol.*, 2000, vol. 38, 781-8 [0014]
- MARLOWE, E.M. et al. *J. Clin. Microbiol.*, 2003, vol. 41, 5127-33 [0014]
- SOGAARD, M. et al. *J. Clin. Microbiol.*, 2005, vol. 43, 1947-9 [0014]
- MARTINEAU, F. et al. *Antimicrob. Agents Chemother.*, 2000, vol. 44, 231-8 [0014]
- SHRESTHA, N.K. et al. *Approved standard M2-4A*, 1990 [0014]
- STROMMINGER, B.C. et al. *J. Clin. Microbiol.*, vol. 41, 4089-94 [0014]
- TAN, T.Y. et al. *J. Clin. Microbiol.*, 2001, vol. 39, 4529-31 [0014]
- LEVI, K. ; TOWNER, K.J. *J. Clin. Microbiol.*, 2003, vol. 41, 3890-3892 [0014]
- POULSEN, A.B. et al. *J. Antimicrob. Chemother.*, 2003, vol. 51, 419-421 [0014]
- MASON, W. J. et al. *J. Clin. Microbiol.*, 2001, vol. 39, 3332-3338 [0014]
- KRISHNAN, P.U. et al. *J. Clin. Pathol.*, 2002, vol. 55, 745-748 [0014]

- **SHRESTHA N.K. et al.** *J. Clin. Microbiol.*, 2002, vol. 40, 2659-2661 [0014]
- **YE, R.W. et al.** *J. Microbiol. Methods*, 2001, vol. 47, 257-272 [0016]
- **DERISI, J.L. et al.** *Science*, 1997, vol. 278, 680-686 [0016]
- **DUGGAN, D.J. et al.** *Nat. Genet.*, 1999, vol. 21, 10-14 [0016]
- **LASHKARI, D.A. et al.** *Proc. Natl. Acad. Sci. USA*, 1997, vol. 94, 13057-13062 [0016]
- **WANG, R.F. et al.** *FEMS Microbiol. Lett.*, 2002, vol. 213, 175-182 [0016]
- **BEKAL, S. et al.** *J. Clin. Microbiol.*, 2003, vol. 41, 2113-2125 [0016]
- **VOLOKHOV, D. et al.** *J. Appl. Microbiol.*, 2003, vol. 95, 787-798 [0017] [0017]
- **VOLOKHOV, D. et al.** *J. Clin. Microbiol.*, 2003, vol. 41, 4071-4080 [0017] [0017]
- **VOLOKHOV, D. et al.** *J. Clin. Microbiol.*, 2002, vol. 40, 4720-4728 [0017] [0017]
- **CHIZHIKOV, V. et al.** *Appl. Environ. Microbiol.*, 2001, vol. 67, 3258-3263 [0017]
- **STEARS, R.L. et al.** *Nat. Med.*, 2003, vol. 9, 140-145 [0018]
- **HUGHES, T.R. et al.** *Nat. Biotechnol.*, 2001, vol. 19, 342-347 [0018]
- **ANTHONY, R.M. et al.** *J. Clin. Microbiol.*, 2000, vol. 38, 781-788 [0019]
- **FITZGERALD, J.R.** *Proc. Natl. Acad. Sci. USA*, 2001, vol. 98 (15), 8821-8826 [0020]
- **LIU, R. H. et al.** *Anal. Chem.*, 2004, vol. 76 (7), 1824-31 [0039]
- **STOMAKHIN, A. A. et al.** *Nucleic Acids Res.*, 2000, vol. 28 (5), 1193-8 [0039]
- **STEARS, R.L. et al.** *Nat. Med.*, 2003, vol. 9, 140-5 [0044]
- **SOUTHERN, E. et al.** *Nat. Genet.*, 1999, vol. 21, 5-9 [0049]
- **MÜLLER, H.-J. ; RÖDER, T.** *Der Experimentator: Microarrays.* Spektrum Akademischer Verlag, 2004 [0066]
- **POLYZOU, A. et al.** *J. Antimicrob. Chemother.*, 2001, vol. 48, 231-4 [0073] [0074] [0110]
- **POURNARAS, S. et al.** *J. Clin. Microbiol.*, 2001, vol. 39, 779-81 [0073] [0074]
- **SAMBROOK et al.** *Molecular Cloning: A Laboratory Manual.* Cold Spring Harbor Laboratory, 1989 [0086]
- **AUSUBEL et al.** *Current Protocols in Molecular Biology* 1987-1988. Wiley Interscience, 1987 [0086]
- **SAMBROOK, J. ; RUSSEL D.W.** *Molecular Cloning: A Laboratory Manual.* Cold Spring Harbor Laboratory Press, 2001 [0098]
- **BEKAL, S. et al.** *J. Clin. Microbiol.*, 2003, vol. 41, 2113-25 [0107]
- **ELLIOTT, S.J. et al.** *Mol. Microbiol.*, 1998, vol. 28, 1-4 [0107]
- **SCHMIDT, H. et al.** *Infect. Immun.*, 1995, vol. 63, 1055-61 [0107]
- **CHAMBERS, H.F.** *Clin. Microbiol. Rev.*, 1997, vol. 10, 781-91 [0110]
- **POOLE, K.** *Clin. Microbiol. Infect.*, 2004, vol. 10, 12-26 [0120]
- **SEIDMAN, C.E. et al.** *Current Protocols in Molecular Biology.* John Wiley & Sons, Inc, 2000 [0126]
- **MURRAY, M.G. ; THOPSON, W.F.** *Nucl. Acid Res.*, 1980, vol. 8, 4321-4325 [0129]
- **SAHM, D. ; WASHINGTON, J. A.** *Manual of Clinical Microbiology.* American Society for Microbiology, 1991, 1105-16 [0142]